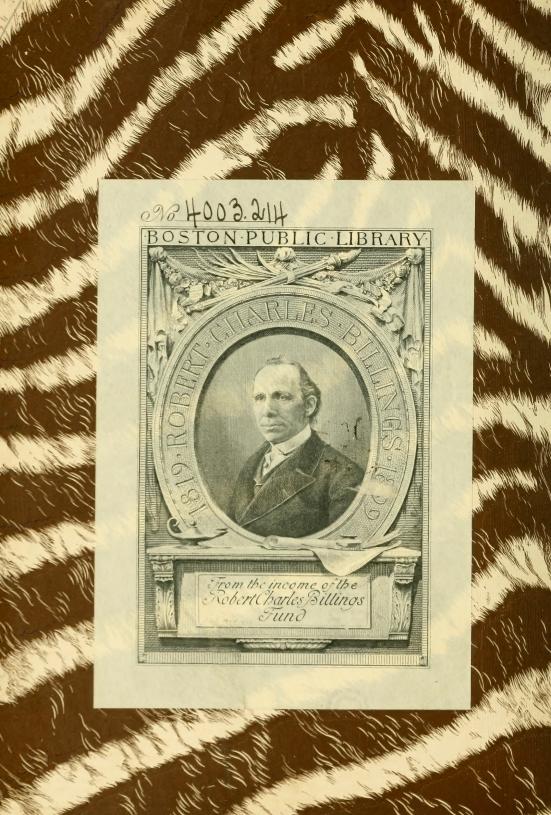
ROWLAND WARD'S RECORDS OF BIG GAME



SEVENTH EDITION 1914











ROWLAND WARD'S RECORDS OF BIG GAME

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ROWLAND WARD'S RECORDS OF BIG GAME

WITH

THEIR DISTRIBUTION, CHARACTERISTICS, DIMENSIONS, WEIGHTS, AND

HORN & TUSK MEASUREMENTS

SEVENTH EDITION

EDITED BY

R. LYDEKKER, F.R.S.

AND

J. B. BURLACE, F.R.G.S., F.Z.S.



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YAAAALOLIALA AHT 90 MOTOOG 90YTO

TO THE

SPORTSMEN OF THE WORLD

WITHOUT WHOSE ENTERPRISE THESE RECORDS

COULD NOT HAVE BEEN COMPILED

THIS BOOK IS DEDICATED



PREFACE TO THE SEVENTH EDITION

THERE are three main points the great-game sportsman generally wants to ascertain:—1st, the name of his quarry; 2nd, how it compares in point of size with other specimens of the same species; and, 3rd, what is the extent of its geographical range. All these he will be able to ascertain from the present work.

As in former editions, the finest known specimens of antlers, horns, tusks, and skins are, so far as possible, recorded. It is to be regretted that one pair of hands and a steel-tape are not responsible for the measurements of all the actual "records." But it has been found impracticable in some instances to verify the measurements of trophies, especially in distant parts of the world; and such records must accordingly be taken on the responsibility of their respective owners or those who have been good enough to measure them. One of the many difficulties in connection with compilations of this nature is due to the circumstance that different measurements of the same specimen are sometimes received, this often arising from the use of a tape or string instead of a steel-measure.

Great care has been taken with regard to the accuracy of the dimensions given; and, considering the number of measurements, it will be readily understood the task attempted has been one of no ordinary difficulty. In the case of the horns of freshly killed hollow-horned ruminants an allowance for shrinkage should be made when comparing with older trophies. An average specimen of an *Ovis ammon* horn, for instance, will frequently shrink half an inch in length and proportionately in girth after it has left the field. Ivory tusks also deteriorate in weight.

Among the deer tribe many difficulties have arisen as to comparison; and it may be pointed out that although length of antlers is invariably put at the top of the list, other particulars, such as number of tines, general symmetry, spread, and weight of antlers, go in many instances to the making of a good trophy.

A notebook for use on the field will be found in a pocket at the end of this volume.

Acknowledgments are due to a number of sportsmen (especially to Sir Edmund G. Loder) and naturalists all over the world for the help they have afforded.

As in the three previous editions, Mr. Lydekker is responsible for the technical nomenclature and descriptions. Since the text was printed off he has ascertained that *Sika* is the proper subgeneric name of the deer of the Sika group, and *nippon* the earliest specific designation of the type species. The amended names of the various members of this group will consequently stand as follows:—

- 1. Cervus (Sika) nippon, p. 49.
 - (a) C. nippon typicus, p. 50.
 - (b) C. nippon manchuricus, p. 50.
- 2. Cervus (Sika) taëvanus, p. 51.
- 3. Cervus (Sika) hortulorum, p. 52.

THE EDITORS.

ABBREVIATIONS AND SIGNS

- Owner's measurements and particulars, or other known authority. 9 Female.

đ Male.

... Unrecorded.

R, Right horn or antler. L, Left horn or antler.

G.S. Greatest spread.

Measurements are usually on the outside of the longest horn from base to tip; but in Deer from the bottom outside edge of the burr, or coronet, to the highest tip-point, except when notified to the contrary.

Circumference is at the base; in most Deer above brow-tine, but in the Red-Deer and Wapiti group between bez and trez tines.

Length is expressed in inches, when not otherwise stated, and the tape should be laid on the centre of the front curve of antelope horns such as Reedbuck, etc.

Weights taken in the field should be accepted as approximate, and, unless the contrary is stated, are those of adult males.

Heights are in most cases taken at the shoulder of adult males (see p. 517).

N.B.—Unless the contrary is stated, the specimens and illustrations are those of males.



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RECORDS OF BIG GAME



Shot by Mr. Walter Jones.

The RED DEER (Cervus elaphus).

THE red deer of Western Europe is the typical representative of the genus Cervus, in which the antlers of the stags are set on the skull at an oblique angle to the middle line of the forehead, and have a true brow-tine, while they are generally more or less nearly cylindrical. There is always a large bare portion on the muzzle, the face is long, the ears are generally large, and the tail is comparatively short, often extremely so. Although there is almost always a gland and tuft on the hind cannon-bone, usually situated high up, there is none on the hock

В

itself. The coat may be spotted in the adult, and is almost invariably so in the young.

In the red deer the antlers are subcylindrical and complex, generally with a bez-tine, and always with a trez, the number of points exceeding five, and the crown frequently forming a cup. The tail is relatively long and pointed, and there is an orange-coloured patch on the buttocks, which includes or surrounds the tail. The general colour of the adult summer coat is reddish brown, and that of the winter dress greyish brown, often with a dark dorsal stripe; stags frequently showing a throat-fringe. The young, in which the ground-colour is of a richer tint, are profusely spotted with white.

Red deer, in the widest sense of the term, are inhabitants of Europe, North Africa, Asia Minor, and Northern Persia. In the typical red deer (C. elaphus typicus) of Sweden, and its representatives in Western, Northern, and Central Europe, the antlers attain their maximum degree of complexity, sometimes having twenty or even more points, although in many Scotch examples the bez-tine is wanting. The Swedish red deer is the typical Cervus elaphus of Linnæus, in other words, Cervus elaphus typicus. From this race the Norwegian red deer differs by its inferior size, the lighter colour of the summer coat, and the presence of a distinct dark border to the rump-patch. The general colour of the Swedish race is dark reddish brown, almost chestnut, with the legs sooty or blackish brown; while in the Norwegian animal the colour is yellowish brown tinged with grey, the legs being paler and of a brownish slaty grey. The rump-patch is also lighter in the Norwegian race, being reddish yellow with a blackish border, while that of the Swedish red deer is less distinct, sometimes scarcely differing in colour from the flanks. There are also differences in the skulls of the two races, especially noticeable in the case of hinds. The Norwegian red deer has been named Cervus elaphus atlanticus; and the Scotch red deer, C. e. scoticus, is closely allied. Several races of red deer have been named in Germany, but these may be included under one heading as C. c. germanicus. This is a large deer, with a very light, and usually black-bordered, rump-patch. The Spanish race 'C. e. hispanicus, which is smaller, with a greyer coat and narrower skull, is said to lack the abundant neck-fringe of Scotch deer.

The red deer (C. claphus corsicanus) of Corsica and Sardinia is a small race, without a bez-tine to the antlers, and the general colour of the upper-parts dark brown in summer, with the upper side of the tail coloured like the rump-patch, and blackish in the winter. Nearly allied is the North African red deer (C. claphus barbarus), which is of rather larger dimensions, with a greyish-brown streak down the middle of the back, and small irregular whitish spots on the flanks

and sometimes on the back; traces of such spots being occasionally observable in the summer coat of hinds of the typical race. The beztine seems to be very generally wanting.

The Eastern red deer (C. elaphus maral) is a large race, described on page 28.

In a red deer killed at Spetchley Park the weight was 419 lbs. gross, and 216 when cleaned; while in one shot at Knowsley many years ago the clean weight was no less than 424 lbs. The height at the shoulder reaches about 4 feet. H.R.H. the Duke of Braganza saw a Continental stag shot which scaled 584 lbs., and shot a 10-pointer with a spread of 55 inches.

The late Lord Tweedmouth gave the following dimensions of a fine Scotch stag, shot October 9, 1880:—

Widest span over all, 39\frac{1}{4} inches; span inside below cups, 34 inches; span outside below cups, 37 inches.

Right antler.—Length, 39 inches; length of brow, $10\frac{1}{4}$ inches; of bez, 10 inches; of trez, 13 inches. Length of tines in cup, 10, 7, $4\frac{1}{4}$ inches. Circumference at coronet, $8\frac{1}{2}$ inches; between bez and trez, $7\frac{1}{4}$ inches; above trez, 6 inches.

Left antler.—Length, 38 inches; of brow, 10 inches; of bez, 8 inches; of trez, 11 inches. Length of times in cup, 8, 6, and 4 inches. Circumference at coronet, 9 inches; between bez and trez, $7\frac{1}{2}$ inches; above trez, $6\frac{1}{4}$ inches.—Weight, 303 lbs. clean; but stag was much run.

A.—BRITISH AND IRISH RED DEER (C. elaphus scoticus).

a.—Scottish Specimens.

Length on out- side curve.	Circum- ference between bez and trez.	Tip to	Widest inside.	Spread.	Points.	Weight.	Locality.	Owner.
$40\frac{1}{2}$	5	22	33		7 + 7		Inverness, 1794	Col. W. Hall Walker.
401	$6\frac{1}{8}$				8+8	•••	Glenartney .	Mrs. Campbell of Dunstaffnage.
1-40	6		30		10	203	Glentilt .	Duke of Atholl.
$-39\frac{1}{2}$	5		25		6+6	•••	Ardverikie .	E. J. Wythes.
$-39\frac{1}{2}$	4 ³	26	33	$35\frac{1}{2}$	5+5	266	Kinveachy .	Major J. J. Porteous.
-39	6		34	391	6+6	303	Guisachan .	The late Lord Tweed-mouth.
39	6	$27\frac{1}{2}$	34	39 ³ / ₅	6+6		?	Duke of Portland.
$-38\frac{1}{2}$	4 <u>3</u>		26		11		Isle of Rum .	Sir George Bullough.
$38\frac{1}{2}$	61	$7\frac{3}{4}$	$19\frac{1}{2}$	$30\frac{1}{2}$	9+8		Glenfiddich .	Duke of Richmond and Gordon.
$38\frac{1}{2}$	51		31		5+6		Strathvaich .	J. C. Williams.
384	53	14	27 ³	33	6+5	246	Meoble .	Walter Jones.
384	6	26	$33\frac{3}{4}$	40 ³ / ₄	7+6		?	Duke of Beaufort.
38‡	5 5		•••		5 + 5	•••	Kinlochewe .	Sir Kenneth Mackenzie, Bart.

⁻ Owner's measurements.

¹ Recorded by J. G. Millais.

Length on out- side curve.	Circum- ference between bez and trez.	Tip to Tip.	Widest inside.	Spread.	Points.	Weight.	Locality.	Owner.
381	5½		30∄		7 + 7	lbs.	?	The Hon. Mrs. Gordon-
38	45		291		6+6		Fannich .	Cumming. V. J. Watney.
J7 1/2	45		28½	36 3	6+5		Barrisdale .	W. Parrott.
371	5		26		6+5		Mar	Mrs. E. Ross.
37½	42		30.}		5 ± 5		Wyvis	R. Shoolbred.
37½	5½				10		Conaglen .	Lord Morton.
-37½	6 1	13	$28\frac{1}{2}$		8+8		Glenmoriston	J. M. Grant.
37‡	$4\frac{1}{2}$		$32\frac{1}{2}$		6+6		Brodick .	Marquis of Graham.
-37 1	$5\frac{1}{2}$		24	$27\frac{1}{2}$	5+5		Forfarshire .	R. L. Scott.
37	4 <u>2</u>		23		6+6	378	Brodick .	Marquis of Graham.
-37	1		30		5+4		Lettermorar .	W. A. Dewhurst.
$-36\frac{1}{2}$	4 ³		35		6+6		Glenmoriston	The Hon. Mrs. Gordon-
36½	5	34	37	41	5+6		Glenstrath-	Cumming. W. Radcliffe (shot by the late
-36½							farrar Auchnasheen.	R. Gordon-Cumming). Sir Edmund G. Loder, Bart.
$-36\frac{1}{2}$	4 3/4		31½		6+6		Rhidorroch .	Countess of Cromartie.
$-36\frac{1}{2}$	51		301		11	280	Benmore, Mull	Earl of Eglinton.
-36½	4 ³ / ₄		$27\frac{1}{2}$		II		Glomach .	The late Col. Baldock.
-361	5		26		6+ 6		Ben Klibreck	J. W. Baxendale.
-36‡	$4\frac{1}{2}$		27		10		Affaric	S. Dennis.
-361	$4\frac{1}{2}$		$25\frac{1}{2}$		6 + 5	235	Cluanie .	A. H. Straker.
36}	5 1 8		$24\frac{3}{4}$		5 + 5		Gaick	G. Hargreaves.
-361	45		244	• •	6+6		Arran	H.R.H. Prince Arthur of Connaught.
361	5		22		6+5	***	Kintail	S. Loder.
36	53		33‡		5 + 5		Corrour .	Sir J. M. Stirling-Maxwell, Bart.
36	43	83	28	$33\frac{3}{4}$	7+7		Knoydart .	A. S. Bowlby.
-36	51		27.1		6+6		Dunrobin .	Duke of Sutherland.
36	4 7		26½	• • •	6+6		Langwell .	Duke of Portland.
36	41	211	27		6+6	***	Caenlochan .	Mrs. Henry Tate.
-36	41		321		5+5		Inchbaie .	F. L. Davis.
36	$4\frac{1}{2}$	17	28%	314	5+5	225	Meoble	E. M. Crosfield.
357	43	221	314	34	5 = 5		Strathvaich .	Do.

⁻ Owner's measurements.

Length on out- side curve.	Circum- ference between bez and trez.	Tip to Tip.	Widest inside.	Spread.	Points.		Locality.	Owner.
36	4 5	193	28 ³ / ₄	30½	5+4	lbs.	Ardgour .	Lord H. Vane Tempest.
36	51	134	283	$32\frac{3}{4}$	5+5		Glenkingie .	W. M. Christy.
36	$4\frac{1}{4}$		31		5+5	308	N. Uist	W. Brigstock.
36	4 5		$26\frac{1}{2}$		5+6		Morar	W. A. Dewhurst.
-36	5\frac{1}{8}		$30\frac{1}{2}$		6+7		Glenquoich .	J. E. B. Baillie.
-36	4 ³ / ₄		27	• • •	2+2	276	Glenfinnan .	F. Fenwick.
-35\frac{3}{4}	$4\frac{3}{4}$		26		6+6		N. Uist .	C. H. Dendy.
-35\frac{3}{4}	$4\frac{1}{4}$		$32\frac{1}{2}$	•••	5+5		Affaric	L. A. Ballance.
-35§	$4\frac{5}{8}$	23	$28\frac{1}{2}$	31	4+4		Dalnamein .	C. T. Garland.
35∄	$4\frac{1}{2}$		2 9‡		6+5		Garrygualach	Major H. G. Fenton- Newall.
$-35\frac{1}{2}$	$4\frac{1}{2}$		31	,	5+5	•••	Loch Choire	Duke of Sutherland.
$-35\frac{1}{2}$	$4\frac{3}{4}$		$27\frac{3}{4}$		12	•••	Ardnamurchan	R. C. Donaldson-Hudson.
$35\frac{1}{2}$	$5\frac{1}{2}$		$25\frac{1}{2}$		6+6	244	Sutherland .	Abel Chapman.
$-35\frac{1}{2}$	$4\frac{3}{4}$		27		5+5	•••	Branlen .	Earl of Derby.
$35\frac{1}{2}$	$4\frac{1}{2}$	$\operatorname{II}\tfrac{1}{2}$	26 <u>1</u>	30	6+6		Isle of Mull .	W. Mure.
$35\frac{1}{2}$	$4\frac{3}{4}$		$26\frac{1}{2}$		10+10		Glenquoich .	Dowager Lady Burton.
$35\frac{1}{2}$	$4\frac{1}{2}$		24 \frac{3}{4}		6+6		Craiganour .	H. Samuelson.
$35\frac{1}{2}$	$4\frac{3}{4}$	•••	313		5+5	***	Benula .	Stanley M. Dennis.
$35\frac{1}{2}$	$4\frac{1}{2}$	$24\frac{1}{2}$	2 9 $\frac{3}{4}$	$32\frac{1}{2}$	5+5	• • •	Ben Alder .	Lord Hythe.
$-35\frac{1}{2}$	6	•••	$38\frac{1}{2}$		5+5	•••	Kinlochewe .	Sir Kenneth Mackenzie, Bart.
-35 ³ 8	$4\frac{1}{2}$	•••	30	•••	4+4	***	Gaick	J. Hargreaves.
351	5	25	304	35	6+4		Coignafern .	J. Bradley Firth.
35‡	5	•••	251		7+8	•••	Ardverikie .	Sir J. W. Ramsden, Bart.
-35‡		•••	27 ³ 8		14	•••	Glenfeshie .	Sir G. A. Cooper, Bart.
$35\frac{1}{4}$	$4\frac{1}{2}$	•••	$29\frac{1}{2}$		6+6	248	Invercauld .	L. Neumann.
-351	5		24 ⁸ / ₄		6+5		Eskadale .	Major A. Robinson.
-354	51		2 7½	• • •	6+6	•••	Blackmount.	Countess of Sefton.
-354	$4\frac{7}{8}$	7 ³ / _₹	22	$27\frac{3}{8}$	7+7		Killiechonate	F. Cooper.
-351	$5\frac{1}{2}$	•••	26‡	•••	5+5	•••	Glenfinnan .	G. Bainbridge.
-351	$4\frac{7}{8}$	317	30		6+6		Deanich, Ross- shire	G. P. V. Aylmer.

⁻ Owner's measurements.

Length on out- side curve.	Circum- ference between bez and trez	Tip to Tip.	Widest inside.	Spread.	Points.	Weight.	Locality.	Owner.
-35‡	51		26		7+7	lbs.	Glenartney .	Dowager Countess of
-351	5		$32\frac{1}{2}$		6+6		Ardnamurchan	Ancaster. C. D. Rudd.
35 ¹ / ₈	41		33		4+3		Caenlochan .	J. J. de Knoop.
35	$4\frac{7}{8}$	13 3	$24\frac{1}{2}$	29	5+5		Glenkingie .	W. M. Christy.
35	43	22	28		7+6		Talladh-a-Bhe- ithe, Rannoc	E. Weller-Poley.
-35				34	10	225	N. Morar .	Major T. W. Gill.
-35			29	411	7+6		Monymusk .	Sir Arthur Grant, Bart.
-35	413		38‡		5+4		Invermark .	Earl of Dalhousie.
35	$4\frac{1}{2}$	${\tt I}2\tfrac{3}{4}$	24 ⁵ / ₈	27	6+6		Glenbruar .	A. M. Thomas.
35	4 3 8		$29\frac{1}{2}$	• • •	6+5	• • •	Glenartney .	V. Fleming.
1-35	5 ³ / ₄	26	$33\frac{1}{2}$	$37\frac{1}{2}$	12	• • •	Guisachan .	The late Lord Tweed-mouth.
35	$4\frac{1}{2}$	19‡	2 6 $\frac{3}{4}$	$28\frac{1}{2}$	5 + 5		Glenkingie .	Sir Henry Hoare, Bart.
-35	$4\frac{3}{4}$		29		4+4		Ledgowan .	L. A. Ballance.
34 ³ / ₄	41	131	26	$28\frac{1}{4}$	5+5		Dibiedale .	H. Hinton.
34 ³	$4\frac{3}{4}$		321		6+6		Glenborrodale	Captain N. Money.
34 ³ / ₄	41	31	36 3	381	4+3		Ledgowan .	H. B. Moser.
343	41	$23\frac{1}{2}$	29	$31\frac{1}{2}$	5+4		Kildermorie .	H. Graeme.
$-34\frac{1}{2}$	43		$33\frac{1}{2}$		5+5		Fannich .	V. Watney.
$-34\frac{1}{2}$	5		$25\frac{1}{2}$		7+8		Cluanie .	A. H. Straker.
$^{1}34\frac{1}{2}$	$4\frac{1}{4}$	26½	31	33‡	5+5		Dalnaspidal .	Mrs. Hall Walker.
342	$4\frac{1}{2}$		23		6+6		Glentanar .	Ean Cecil.
$34\frac{1}{2}$	$5\frac{1}{2}$	18	26 <u>‡</u>	34	6+5		?	W. Brodrick Cloete.
34½	51	37½	$34\frac{1}{2}$		12		Braemore .	Sir John Fowler, Bart.
$34\frac{1}{2}$	41	18‡	27		6 + 5	• • •	N. Morar .	J. R. Hutchison.
$34\frac{1}{2}$	4.1		33		6+5		Isle of Skye .	W. H. Lindsay.
2 $-34\frac{1}{2}$	5			$34\frac{1}{2}$	12	231 (clean)	Glentilt .	Duke of Atholl.
341	43	13	25	27	3+3		Glenfeshie .	P. K. Smiley.
$34\frac{1}{4}$	45	22	281	318	6+4	204	Cluanie .	St. George Littledale.
341	43		261		6+5		Mamore .	F. Bibby.
341	43		29		9+8		Ardverikie .	Viscount Iveagh.
-341	41		26	281	4+4	•••	Wyvis	J. F. Wilkin.

⁻ Owner's measurements.

¹ Above trez.

² Recorded by J. G. Millais.

Length on out- side curve.	Circum- ference between bez and trez.	Tip to Tip.	Widest inside.	Spread.	Points.	Weight.	Locality.	Owner.
341	4	2 I $\frac{3}{4}$	291	31 ³ / _±	6+5		Glenquoich .	Duchess of Bedford.
-341	41	83	2 I $\frac{3}{4}$	29 5	5+5		Glenee	J. Bayly.
-34 ¹ 8	5		3112		5+5		Knoydart .	Capt. H. V. S. A. Bowlby.
34	4	$28\frac{1}{2}$	303		5+4		Glenmuick .	LieutCol. J. Ponsonby.
34	4 3		271		6+6		Balmoral .	His Majesty the King.
-34	5		$26\frac{1}{2}$		12		Achnacarry .	J. C. Kennedy.
34	4 ³		36		5+5	308	Jura	Lord George Campbell.
-34	4 1 8		28	• • •	7+7		Kildermorie .	L. Wilkin.
-34	48		$34\frac{1}{2}$	36½	6+6		Glenbruar, Perthshire	Sir W. Ogilvy-Dalgleish, Bart.
-34				• • •		268 (clean)	•••	S. Loder.
-34	443		27 g		6+5	• • •		Col. Stephenson R. Clarke.
334	44	30½	35	$38\frac{1}{4}$	7+6	•••	Glenkingie .	W. M. Christy.
33\frac{3}{4}	4	•••	241	•••	7+8	• • •	Ardverikie .	E. J. Wythes.
-33\frac{3}{4}	$4\frac{1}{2}$		26	•••	5+6		Ardnamurchan	Mrs. R. Fleming.
$-33\frac{1}{2}$	5		$34\frac{1}{2}$	• • •	5+5	280	Dalness .	J. G. Millais.
$33\frac{1}{2}$	41	• • • •	34		5+5		Gaick	R. Hargreaves.
$33\frac{1}{2}$	4	$16\frac{1}{2}$	25	29	5+5		Caenlochan .	H. C. Pilkington.
$33\frac{1}{2}$	$4\frac{7}{8}$	$25\frac{5}{8}$	$24\frac{1}{2}$	$35\frac{1}{4}$	9+8	•••	Glenfiddich .	Duke of Richmond and Gordon.
$33\frac{1}{2}$	$4\frac{1}{2}$	22	28	$30\frac{1}{2}$	6+5		Auchnasheen	A. G. Dickson.
$-33\frac{1}{2}$	5 5		$25\frac{3}{4}$		6+6		Eskadale .	Hon. L. Hardy.
$33\frac{1}{2}$	$4\frac{1}{2}$		27		12		Kintail	Sir Edmund G. Loder, Bart.
$-33\frac{1}{2}$	5		24 ³ / ₄		11		Forest Lodge	LieutCol. H. Kays.
$33\frac{1}{2}$	5		30		5 ± 7		Dalness .	Hon. Sir Schomberg M'Donnell.
-33 8	$3\frac{7}{8}$	2 6	31	$34\frac{1}{2}$	6+5		Dundonnell .	R. B. Loder.
33 ¹ / _*	4	19章	26	32	6+6		Ben Alder .	Sir R. W. Buchanan Jardine, Bart.
331	4 ¹ / ₄		193		7+7		Glendoe .	Mrs. E. Ross.
331	41	171	28	$29\frac{1}{2}$	5+5		Ardverikie .	Col. W. Hall Walker.
334	4 5		26		5+5	285	Inversilort .	J. Cameron Head.
-33‡	4 ³ / ₄		$23\frac{1}{2}$		6+6		Arnisdale .	T. Drake.
334	4	125	22 ³ / ₄	25	5+4	233	Glencoul .	Lieut Col. A. Weston Jarvis.
, 1	-	read o	of the	six w	videst	heads	in the late I	Duke of Fife's collec-

tion is as follows:— 40 38 37 35 35
The six longest measuring—37 36 $35\frac{1}{2}$ 35 35

Owner's measurements.

The antlers of one of the red deer in Mr. C. Lucas's park at Warnham Court, Sussex, in 1889, had 35 points; 1890, 34 points; 1891, 38 points; 1892, 47 points, and weighed 17 lbs.; 1893, 44 points, $16\frac{1}{2}$ lbs.

b .- Irish Specimens (wild and park).

Len on o sio	le hezan	en Tip		Outside spread.	Points.	Weight.	Locality.		Owner.
1-4	$2\frac{1}{2}$				12	315	Colebrooke	٠	The late Sir Douglas Brooke, Bart.
-4	т 6	17½	23		10+9	325	Do.		Do.
-4	5 ½	28	$29\frac{1}{2}$		8+8	355	Do.	٠	Do.
39	9\$ 5\$	142	263	• • •	7+7	375	Do.	۰	Do.
35	5 5 2	151	26‡	321	7 + 7		Do.	٠	W. Campbell.
3	5 5 5	93	$23\frac{3}{8}$		8+8		Roscommon	١.	Earl of Kingston.
37	$7\frac{1}{2}$ $5\frac{1}{4}$	23章	28½	$34\frac{1}{2}$	6+5	380	Muckross	٠	A. Vincent.
33	5 ³ / ₄ 5 ³ / ₄		35		5+5	264	Glenveagh	۰	W. E. Laurie.
3	54 54		201		7+7		Muckross		Ralph Sneyd.
33	5 5	22	301	$36\frac{7}{8}$	6+5	343	Roscommon		Earl of Kingston.
33	5 44		30		9	* * *	Ireland	٠	Hon. A. Charteris.
-33	$4\frac{7}{5}$	$25\frac{1}{4}$	30	37 1 8	6+6	2 60	Glenveagh		A. Arthur.
35	5 5 8	195	26 <u>3</u>		6+5	282	Powerscourt		Viscount Powerscourt.
34	1 5		29		7+6	348	Glenveagh		G. W. Hartley.
34	$4\frac{1}{2}$	$25\frac{1}{2}$	$28\frac{1}{2}$		6+6	364 as he fell; 280 clean	Powerscourt		Viscount Powerscourt.
34	43		3112		6+5	372	Muckross		Ralph Sneyd.
34	4 4 8	138	25		5 + 5	•••	Colebrooke	٠	Major J. M. Rogers.
33	31 5	24	291	341	8+7	360	Muckross	۰	A. Vincent.
33	4 4		24		5+5	346	Glenveagh		Col. W. Hall Walker.
33	5	20	28}		5+5	281	Do.		W. W. Ashley.
32	51		243		7+6	422	Glena .		Earl of Kenmare.
32	4 1		32}		5+6		Killarney		G. Douglas.
31	₹ 5	257	314		5+6		Donegal		Col. W. Hall Walker.
31	1 41		217		7 7		Muckross		Lord Mayo.
31	4 45	15	25%	29}	5 + 4		Do.		F. G. Menzies.
31	½ 5	143	25%	27%	6+5	276	Do.		C. E. Russell.

⁻ Owner's measurement.

¹ See Millais's British Deer and their Horns.



Head of Exmoor Red Deer. Mr. R. A. Sanders.

c.—West of England Specimens.

on	Circum- ference between bez and trez.	Tip to Tip.	Widest inside.	Outside spread.	Points.	Locality.		Owner.
¹ 41	54	$2I\frac{1}{2}$	$32\frac{1}{4}$		5+5	Exmoor		Sir John Heathcoat-Amory, Bart.
40	$5\frac{7}{8}$	10	28	38	7+6	Do.		Do.
39	53	15≩	$28\frac{1}{2}$		6 + 6	Do.		R. A. Sanders.
39	58	134	271	$34\frac{3}{4}$	4+4	Do.		P. F. Hancock.
$38\frac{1}{2}$	5 1 8	178	$31\frac{1}{2}$		6 + 6	Quantock Hi	ills	Earl Fortescue; killed in 1885.
$38\frac{1}{2}$	5	221	301		7+7	Exmoor		C. Nelder; killed in 1803.
$38\frac{1}{4}$	6	84	24	32	6 + 6	Kiloe		Hon. Mrs. Stanley.
37 ³ / ₄	5	7	$29\frac{1}{2}$	34	5+5	?		J. James.
$37\frac{1}{2}$	$5\frac{1}{2}$	$27\frac{1}{2}$	35 5	48	6+5	Exmoor		Sir John Heathcoat-Amory, Bart.
371	4 ³ / ₄	20	314	36	6+5	Quantock		E. A. V. Stanley.
37	5	23	33½	39 ³ / ₄	6+7	Bembridg Wood	е	Capt. H. H. Amory.

¹ Weight, 333 lbs. clean. Length of brow-tine, 17 inches.

Length on outside curve.	Circum- ference between bez and trez.	Tip to Tip.		Outside spread.	Points.	Locality.		Owner.
363	6	$21\frac{1}{2}$	28 1		6+7	Exmoor		Lord St. Audries; killed in 1893.
361	5§	12	235	$30\frac{1}{2}$	7+6	Stoodleigh		Ian H. Amory.
$-36\frac{1}{2}$		19	28 3	39	6+6	Haddon		M. Greig.
36	4 4	10	24 ³ / ₈	301	9+7	Exmoor		R. A. Sanders.
36	51	125	23	$29\frac{1}{2}$	6 + 5	Do.		Capt. H. H. Amory.
36	58	143	26	$34\frac{1}{2}$	7+6	Do.	1	M. Greig.
35 ³ / ₄	5	15‡	27	33	6+6	Do.	٠	Hon. G. Bampfylde.
35½	5	20%	$27\frac{1}{2}$		6 + 6	Do.		Earl Fortescue; killed in 1812.
$35\frac{1}{2}$	5	143	27 3	34	6+6	Cudden Ho	yes	Capt. H. H. Amory.
35	5	15≩	27		6 + 5	Exmoor	,	Com. G. F. Inglefield, R.N.
35	4 ⁷ / ₈	25½	$32\frac{3}{4}$		5+6	Do.		Sir C. T. D. Acland, Bart.; killed in 1893.

d.—English and other Park Specimens.

				0			-	
Length outside curve.	hetween	Tip to Tip.	Widest inside.	Spread.	Points.	Weight (clean).	Locality.	Owner.
45	7 ½				11+11	lbs.	Warnham .	C. J. Lucas.
¹ 44	5≩	231	$33\frac{1}{2}$	514	12+9		Woburn .	Duke of Bedford.
43\$	51/2	241	351	39	6+6		Windsor .	His Majesty the King.
421	63			40	12		Melbury, Dorset	Earl of Ilchester.
42 1	55		27		11+10		Ashridge Park	Earl Brownlow.
411	51	184	28 3	37 ³	9+8		?	Lord Hastings.
1411	5	$22\frac{3}{4}$	32		7+6		Langley Park	J. G. Millais.
403	$5\frac{1}{2}$	18 <u>3</u>	31	41	5+5		?	R. V. Berkeley.
402	5₩				10+8		Vaynol .	J. Whitaker.
+40	5		34 ³		8+7	330	Caithness-shire	T. Pilkington.
40			39		32	***	Warnham .	J. G. Millais.
40	41	25	$33\frac{1}{2}$	401/2	6+7		?	W. Cooper.
² 39½	54	$23\frac{1}{2}$	2 63	354	5+5		Woburn .	Duke of Bedford.
³ 39	5 1/2		251		5+6		Ditchley Park	Viscount Dillon.
-39	52		231				Bushey Park .	R. Shoolbred.
39	53	181	$27\frac{3}{4}$	$33\frac{1}{2}$	6+6		?	W. Cooper.
39	43	181	281	37	8 + 8		Osmaston .	Sir Peter Walker, Bart.
381	5	17	27.1	321/2	6 + 6		Whittlebury .	Sir Edmund G. Loder, Bart.
37 2	51	22	$29\frac{1}{2}$	412	8+7		Stowe	H.R.H. le Duc d'Orléans.

⁻ Owner - measurements. 1 Shed antler . 2 White Stag. 3 Killed by King James I. in 1608. Semi-feral.

Length on outside curve.	Circum- ference between bez and trez.	Tip to	Widest inside.	Spread.	Points.	Weight (clean).	Locality.		Owner.
*37½	5		$29\frac{1}{2}$	42 ¹ / _±	6+7	lbs.	Warnham		C. J. Lucas.
$-37\frac{1}{2}$	$7\frac{1}{2}$	$29\frac{1}{2}$	$27\frac{1}{2}$	36½	10+9		Welbeck		Duke of Portland.
1 37 $^{\frac{1}{2}}$	5 ⁸	•••	$33\frac{1}{4}$		6 + 7		Ditchley Pa	ırk	Viscount Dillon.
-37	$6\frac{3}{8}$	$18\frac{1}{2}$	24	43	20+19		Warnham		C. J. Lucas.
37	6	26	$33\frac{1}{2}$		11+13		Do.		Do.
36 <u>1</u>	4 3	19	$29\frac{1}{4}$	$32\frac{1}{2}$	4+4		Wood Nort	on	H.R.H. le Duc d'Orléans.
$35\frac{1}{2}$	5	$22\frac{3}{4}$	28 3	33‡	6 + 6		Do.		H.R.H. the Comtesse de
$35\frac{1}{2}$	5	$7\frac{1}{2}$	20	25	6 + 6		?		H. S. O'Brien.
35	$5\frac{1}{4}$	$19\frac{1}{2}$	$24\frac{1}{4}$	$29\frac{1}{2}$	10+9		?		Hon. M. Egerton.
$34\frac{1}{2}$	7	32	$29\frac{1}{2}$	$52\frac{1}{4}$	11+15		Warnham		C. J. Lucas.
341	$4\frac{1}{2}$	22	$27\frac{3}{4}$	$34\frac{1}{2}$	6 + 6		Windsor		G. L. Harrison.
34	$4\frac{1}{2}$		23		6+6		Stowe .		H.R.H. the Comtesse de Paris.
34	5 5	21 ³ / ₄	$28\frac{1}{2}$		7+7		Dorset .		Earl of Ilchester.
34	6	$24\frac{1}{2}$	32	$37\frac{1}{2}$	10+10		3		Earl of Warwick.
2 33 $^{\frac{1}{2}}$	5	201	241	$31\frac{1}{2}$	5+5		Surrenden		W. Winans.
$33\frac{1}{2}$	4 7		33		6+6		Stowe .		H.R.H. le Duc d'Orléans.

Some of the above measurements are recorded by Mr. J. G. Millais in British Deer and their Horns.

* Semi-feral.

e.—Ancient British and Irish Specimens.

on	ference between bez and trez.	Tip to Tip.	Widest inside.	Spread.	Points.	Where found.		Owner.
$-47\frac{1}{2}$	8	35			5+8	Manchester Shi		Sir R. M. Brooke, Bart.
46	$5\frac{1}{2}$	18 <u>3</u>	31‡	$37\frac{1}{2}$	9 + 8	Achvarasdal		T. Pilkington.
40±	$5\frac{1}{2}$	2 I $\frac{1}{2}$	27	$38\frac{1}{2}$		Forfarshire .		Sir Edmund G. Loder, Bart.
40	$7\frac{1}{2}$	221	$28\frac{1}{2}$	$43\frac{1}{4}$	12+9	Combermere		Duke of Westminster.
$38\frac{1}{2}$	5	18	30	$39\frac{1}{4}$	8 + 6	Ireland .		Viscount Powerscourt.
38½	6‡	30	36‡	$45\frac{3}{8}$	7+5	N. Wales .		Sir R. Williams-Bulkeley, Bart. (See illustration.)
-37	$5\frac{1}{2}$	$23\frac{1}{2}$		394	13+8	Co. Leitrim .		J. Ormsby Lawder.
$36\frac{1}{2}$	5	24	25	$35\frac{1}{2}$	8 + 8	Ireland .		Viscount Powerscourt.
36	$5\frac{1}{2}$	23	27	$37\frac{1}{2}$	10+9	Kerry, Ireland		Sir Edmund G. Loder, Bart.
$35\frac{1}{2}$	5‡	181	$25\frac{1}{2}$	$32\frac{1}{2}$	7+7	Lincolnshire		C. W. Tindall.
$35\frac{1}{2}$	54	$26\frac{1}{2}$	32 8	$42\frac{1}{2}$	13+11	South Ireland	٠	Sir Victor Brooke's Collection.
33	54	23	28	4 I	7+6	Cardigan Bay	٠	H. Marshall.
30½	5	$10\frac{1}{2}$	20	2 4 ³ / ₄	9+8 - Owner	? 's measurements.		Duke of Bedford.



Head of New Zealand Red Deer. Shot by Mr. H. E. Hodgkinson.

f.—New Zealand Specimens (introduced).

	Circum-		-			-	`	_ ′	
Length on out- side curve.	ference between bez and trez.	Tip to Tip.	Widest inside.	Spread.	Points.	Weight.	Locality.		Owner.
48	$6\frac{1}{2}$	71	323	401	6 + 5		Rakaia.		C. Williams.
$47\frac{1}{2}$	7			374	6 + 6		Do.		G. Garrard.
-46	51		$37\frac{1}{2}$	42	6 + 6		N. Otago		H. E. Hodgkinson.
-46	5월		31	$38\frac{1}{2}$	6 + 6		Do.		Melville Gray.
-45	6		$27\frac{3}{4}$	36	6 + 6		Do.		H. E. Hodgkinson.
45	53	$16\frac{1}{2}$	31	$40\frac{3}{4}$	6 + 7		Do.		P. F. Hadow.
-45	5			34	6 + 6		Do.		Major Cliff.
-45	5 1/2			$37\frac{1}{2}$	13		Do.		J. Forbes.
$44\frac{1}{2}$	5	8‡	30	363	6 + 6		Do.		H. M. Cliff.
-441	51		$33\frac{1}{2}$	$37\frac{1}{2}$	7 + 7		Do.		C. D. Hodgkinson.
441	5			394	7 + 6		Do.		P. F. Hadow.
-44	52			40	15		Do.		A. Cowie.
-44	5 ½			38	5+6	* * *	Do.		A. E. Leatham.
431	53		30	37	7 + 7		Do.		C. E. Lucas.
-43	53			$38\frac{1}{2}$	6+6		Do.		J. Horn.
-43	$5\frac{1}{2}$			33	7+7		Do.		J. Grindells.
429	54	22	327	40}	7+7		Do.		W. H. Milburn.
-422	51			37 1	6 + 6		Do.		R. E. Clouston.
42}	5		291		6 + 6		Do.		G. N. Horlick.
-42	47		32		6 + 6		Do.		D. Fraser.
-42	58		383	50	7+7		Do.		J. Faulks.

⁻ Owner's measurements.

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$-41\frac{1}{2}$ $5\frac{1}{4}$ 35 $5+4$ Do H. F. Wallace. $-41\frac{1}{4}$ $5\frac{1}{4}$ $33\frac{1}{2}$ $39\frac{1}{2}$ $7+7$ Do C. D. Hodgkinson. -41 5 $39\frac{1}{2}$ $6+7$ Do R. M. Morten.	
$-41\frac{1}{4}$ $5\frac{1}{4}$ $33\frac{1}{2}$ $39\frac{1}{2}$ $7+7$ Do C. D. Hodgkinson. -41 5 $39\frac{1}{2}$ $6+7$ Do R. M. Morten.	
-41 5 39½ 6+7 Do R. M. Morten.	
T C II and and de	
-41 $6\frac{1}{4}$ $36\frac{1}{2}$ $6+5$ Do J. S. Handyside.	
-41 6 38 5+4 Do D. Bell.	
-41 5\frac{3}{8} \dots \dots 38 18 \dots \	v.
-41 6 37 7+6 Do C. R. Westmacott.	
$-40\frac{1}{3}$ 6 38 5+5 Do R. Nicholson.	
$40\frac{1}{2}$ $5\frac{1}{4}$ $31\frac{3}{4}$ $37\frac{1}{2}$ 40 $6+6$ Do Capt. I. Macdougall	11.
$-39\frac{1}{2}$ $5\frac{1}{2}$ $29\frac{1}{2}$ 10+10 Do J. Faulks.	
-39 7 $30\frac{1}{2}$ $35\frac{1}{2}$ 6+6 Wairarapa . C. P. Skenett.	
$38\frac{3}{4}$ $5\frac{1}{4}$ 15 26 $31\frac{1}{2}$ $6+6$ Do E. N. Senior.	
Jo4 J4 J A Dillington	
Jož V4 D. E.W. Bunner	
30½ 02 20 Ja - 1	
The state of the s	
3/4 52 154 214 20 3 3	
$36\frac{1}{2}$ $5\frac{1}{2}$ $18\frac{1}{4}$ $29\frac{1}{2}$ $32\frac{3}{4}$ $5+5$ Wairarapa . A. Murray.	



Antlers of Ancient British Red Deer, belonging to Sir Richard Williams-Bulkeley, Bart.



Head of Spanish Red Deer, shot by H.R.H. Prince Arthur of Connaught.

B.—SPANISH RED DEER (C. elaphus hispanicus).

Length outside curve.	Circum- ference between bez and trez.	Tip to Tip.	Widest inside.	Spread.	Points.	Locality.		Owner.
43	$5\frac{1}{2}$	15%	$33\frac{1}{2}$	35	6+6	Sierra Morena		J. M. Power.
. 41%	4 2	18	34	37 3	6+4	El Pardo .		Duke of Arion.
1-40			365		17	Sierra Morena		Abel Chapman.
385	43	163	28	35	8+7	El Pardo .		H.M. The King of
$-37\frac{1}{2}$			$34\frac{1}{2}$		15	Sierra Morena		Spain. Abel Chapman.
36	4‡	26	33‡	37½	7+6	El Pardo .	,	H.R.H. Prince Arthur of Connaught.
-351	51	207	31 10	413	7+7	Sierra Morena		Duke of Arion.
-341	415	134	263	31 ½	6-45	Do.		Do.
33	48	2112	30	37	13	?		Prince E. Demidoff.

⁻ Owner's measurements.

¹ A mercutain beacl. There are two races in Spain. By far the largest are those of the "sierras" (or mountains, where good heads run from jo to 40 inches. The stags of the "coto." (or wooded plains) seldom reach, and twelf excess, jo inches in anti-r-length, and the heaviest weighed so; ib., clean.

Length on outside curve.	Circum- ference between bez and trez.	Tip to	Widest inside.	Spread.	Points.	Locality.		Owner.		
$-32\frac{1}{2}$					13	Plains of Andalucia	٠	W. J. Buck.		
$-31\frac{1}{2}$	$4\tfrac{9}{1.6}$	$\scriptstyle 18_{\overline{1}^{\overline{6}}}^{5}$	$24\frac{15}{16}$	303	7 + 7	Valle de Viejas .		Duke of Arion.		
-31	$4\frac{1}{1}\frac{5}{6}$	$18\frac{15}{16}$	241	$34\frac{1}{2}$	9+7	Montes de Toledo		Do.		
-31	4 5	28			15	Coto Doñana .		P. Garvey.		
-2 9	51		25	• • •	I 2	Andalucia		Abel Chapman.		

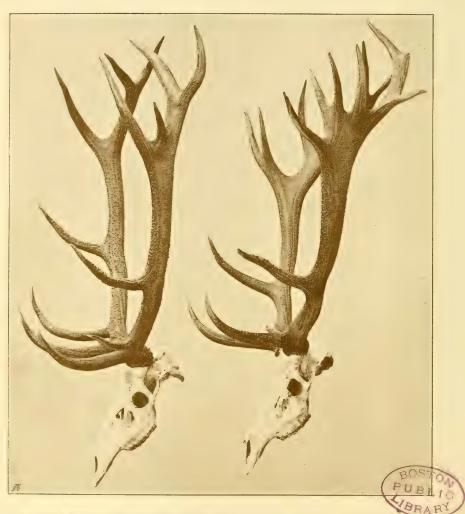
C.—NORWEGIAN RED DEER (C. elaphus atlanticus).

Length	Circum- ference between bez and trez.	Tip to Tip.	Widest inside.	Spread.	Points.	Weight.	Locali	ty.	Owner.
$-34\frac{1}{4}$	$6\frac{1}{2}$		***	34§			Norway		J. S. Brunn.
-34					7		Do.		J. H. Thomas.
313	43		$25\frac{1}{2}$		6+5		Do.		A. Brassey.
$3^{\frac{1}{2}}$	$4\frac{1}{2}$		$24\frac{1}{2}$		5+5	• • •	Do.		Sir H. Seton-Karr.
$3^{\frac{1}{2}}$	4 ³		28		4+3		Do.		E. M. Denny.
31	$5\frac{1}{2}$	$27\frac{1}{4}$	24 ¹ / ₈	$33\frac{3}{4}$	8+4		Do.		J. H. Thomas.
30	5		29		I 2	280	Do.		E. M. Denny.
30	41	294	303	33	5+4		Do.		Sir H. Seton-Karr.
2 9‡	45	26	304		6+5		Do.		G. L. Denman.

- Owner's measurements.

D.—GERMAN (C. elaphus germanicus) and CARPATHIAN RED DEER.

The Carpathian red deer, as represented in the Marmoros Forest, appear to be in some degree intermediate between the western and eastern races, having the short face and red-brown summer coat of the former, but tending to blackness on the under-parts as in the latter. West Carpathian deer, at any rate, may however be inseparable from *C. e. germanicus*. In Marmoros there is a second deer, the Polish, or wandering stag, reported to be an immigrant from Galician Poland, which has been regarded as a dwarf form of the maral. In the Bukowina district of the Galician Carpathians there occurs a large grey stag in the plains and a smaller and darker one in the mountains.



Skulls and Antlers of Carpathian Red Deer killed on the estate of the late Prince Henry of Liechtenstein at Tartarow, Galicia.



Skull and Antlers of Carpathian Red Deer shot by the late Prince Henry of Liechtenstein at Tartarow, Galicia, 1895. Length of antler, 46 inches. Weight, 20 lbs. 14 oz.

Owner.	Count Geza Andrassy.	H.R.H. D. Miguel, Duke of Braganza.	Rhys Williams.	E. N. Buxton.	Count Béla Széchényi.	Count Gèza Andrassy.	Sir Edmund G. Loder, Bart.	Count Gèza Andrassy	Duke of Ratibor.	Archduke Frederick.	J. I. S. Whitaker.	Rudolph Pick.	Count Béla Széchényi.	Prince Lulu Rohan.	J. G. Millais.	Count Rudolf Erdödy.	Count Joseph Hoyos.		Prince Philip of Saxe-Coburg and Gotha.	Prince Hugo Windischgraetz.	LieutCol. L. Marshall.
, Locality.	Zemplen, Hungary	Galicia .	Transylvania	Galicia .	Unghvar .	Zemplen Comitat	Hungary .	Do	Pillis Moun- tains	Hungary .	La Mandria	Galicia .	Hungary .	Radauc .	Poland .	Hungary .	Do	Carpathians	Hungary .	S.W. Hun-	Carpathians
Weight of stag.	1bs. 526	453	:	504	÷	519	:	:	i	418	÷	:	:	:	:	433	354	:	:	÷	:
Spread.	:	:	40	45	i	47	50	:	55.9	:	÷	48	:	;	473	:	48 <u>£</u>	42\$;	:	372
Widest inside.	:	÷	342	32.75	:	38	39	:	:	:	40	:	÷	393	37	43.11	:	33	:	÷	30
Tip to Tip.	:	:	143	:	÷	27	28	:	30	:	42	:	:	:	÷	55.4	:	213	i	:	34
Circum- ference between bez and trez.	i	10	65	7.25	i	7.20	7.	:	:	i	9	73	:	:	$6\frac{1}{2}$	8.9	:	:	;	;	6 4
Circumfer- ence below crown.	x-2	151	:	:	81	6	7.3	:	:	64	:	:	6.4	:	:	2.6	98	:	:	:	÷
Cheumfer- ence above middle	-1.	:	:	i	611	7	\$ 9	:	:	7,10	:	i	:	:	:	7.11	616	633	i	÷	:
Circum- ference above bure.	so so	10	:	:	₹\$	S	9.1	:	80.9	9.1	:	ŧ	ex L	:	:	9.3	9116	:	:	:	1
Cheum- ference of burr.	50	11.1	:	:	105	11	113	1116	:	1111	:	:	IO.	:	101	8.01	103	÷	IOIS	:	:
Length along curves	33	5318	55	52	5116	51	51	501.6	50.4	50	50	50	50	403	493	9.64	493	6†	49	48.8	483
Weight avoidupois.	13. c.	over 20 lbs.	:	20 5	1 61	23.0	21 0	:	21 3	20 S	:	:	:	31 and an	oz. or two	20 0	:	i	21 0	25 3	:
Number of points.	10	18	11	- 18	-18	+1.	1 14	-16	12-	71-	-11-	-18	01	†I-	21	-16	-18	13	-12	-20	14

The late Prince John of	H.R.H. the Duke of Saxe-	Sir Edmund G. Loder, Bart.	Do.	H.R.H. D. Miguel, Duke of	Prince Philip of Saxe-Coburg	Count Ferdinand Trautt-	A. von André.	Duke of Portland.	Antal Réh.	Count Esterhazy.	Count László Májláth.	Head-keeper Ganovszky.	Count Francis Nádasdy.	Count László Májláth.	J. G. Millais.	Count Pal Dégenfeld.	Prince Victor Ratibor.	Count Max Hoyos.	Count Béla Széchényi.	Count Jenö Zichy.	Count Mittrovszky.	The late Prince Henry of	TO SET CONTROLL .
Moravia .	Gotha .	Germany .	Hungary .	Galicia .	Hungary .	Do.	Galicia .	Hungary .	Do.	Do	S.W. Hun-	gary N.E. Hun-	gary Do	S.W. Hun-	gary Hungary .	Do	Do.	Do	Do.	C+	Hungary .	Galicia	1 Found in a marsh.
÷	:	÷	:	519	455	532	:	:	:	:	523	:	583	269	:	÷	:	479	508	523	:	:	1 Foun
:	48	51 ³	38	32	:	$29_{1.6}^{9}$:	481	:	÷	:	÷	i	÷	55	:	:	423	:	:	:	:	
:	27	41\frac{1}{2}	43	25	:	$25\frac{1}{4}$	$31\frac{1}{2}$	$39\frac{1}{2}$:	:	:	:	:	:	42	:	i	$39\frac{3}{4}$:	:	÷	36	
:	:	334	38	13	:	354	123	$31\frac{1}{2}$:	:	:	:	:	:	:	:	:	52 ⁷ / ₈	:	÷	÷	:	pointers.
i	:	$6\frac{1}{2}$	7	734	:	:	$6\frac{1}{4}$	73	÷	÷	:	:	÷	÷	:	÷	:	:	:	:	:	:	s are unever
:	:	74	8	12	711	83	:	:	73	63	73	:	711	‡ 9	$\frac{8}{8}$	64	68.9	811	8,5	64	7.28	:	Many of these specimens are uneven pointers.
:	i	64	64	$7\frac{1}{4}$	711	73-	÷	:	:	i	63	÷	$7\frac{1}{16}$	$6\frac{11}{6}$. :	:	8.07	<u>‡</u> 9	611	:	68.9	÷	
834	6	814	9 2	$9^{\frac{1}{2}}_{2}$	91/8	$8_{1.6}$:	÷	\$Z 8Z	101	93	:	7^{11}_{16}	∞ 12/2	:	84	9.45	$9\frac{1}{2}$	9,16	10100	9.25	÷	Owner's measurements.
:	:	e±6	103	10	$II_{1}^{1}_{\overline{6}}$	$11\frac{1}{2}$:	:	$9\frac{1}{2}$	118	II	125	$\frac{8}{8}$ 6	$9^{\frac{7}{8}}$	TOT	98	11.02	914	105 8	916	18.11	:	- Owner's m
48	48	48	48	48	478	47₹	47	47	46%	46%	463	$46\frac{7}{8}$	$46\frac{1}{2}$	46½	461	463	46.46	464	46 ¹ / ₈	46 ¹ ₈	46.06	46	
:	:	183	233	23 0	20 9½	:	:	:	:	:	19 13	$22 ext{ } 14\frac{1}{2}$	20 13	9 61	:	:	20.68	:	22 9	$^{1}_{2}$ II $^{1}_{2}$	16.61	:	
-19	-19	20	1 IS	-14	91-	91-	-13	15	91-	-12	-18	91-	-20	91-	91-	-14	91-	-22	-20	-14	-16	-14	

Оwner.	H.R.H. the Duke of Saxe-	Coburg and Cotha. Prince Altenburg.	Count Erlach.	Count Emil Széchényi.	Albert Tuhász.	Count Michael Esterhazy.	Archduke Joseph Augustus.	Head-keeper Ganovszky.	Sir Edmund G. Loder, Bart.	Dr. Albert von Stephani.	Count T. Eltz.	Count Béla Széchényi.	Archduke Joseph Augustus.	Count George Erdödy.	Archduke Joseph Augustus.	Prince Demeter Ghika.	Prince Montenuovo.	W. H. Wilson.	Prince E. Demidoff,	Archduke Frederick.	Hon. Walter Rothschild.	Archduke Frederick.
Locality.	Gotha .	Carpathians	Bukowina.	Hungary .	Do.	Do	Do	Do	Do	Do	Do	Do	Do	Do.	Do.	Rumania .	Hungary .	۲.	Galicia .	Hungary .	Do	Do
Weight of stag.	: Bs.	:	:	:	:	:	:	:	:	:	:	572	640	:	433	:	:	÷	:	:	:	418
Spread.	9	37	543	÷	:	:	:	:	49	32	:	:	:	:	:	:	:	412	41	:	39	:
Widest inside.	36	293	35	:	:	:	÷	:	421	:	:	÷	:	:	:	344	34‡	34½	33	:	29‡	:
Tip to Tip.	÷	:	:	÷	:	i	:	÷	413	154	:	:	:	:	:	238	29_{1}^{8}	183	$21\frac{1}{2}$:	304	i
Circum- ference between bez and trez.	:	7 }	:	:	:	:	:	:	7.4	:	:	:	:	:	:	÷	S====	, 9	5,43	:	9	÷
Circumfer- ence below crown.	:	:	:	63	7.2	711	S	73	8	x3	7.2	7 3	\$ 9	7.48	611	:	1418	6	:	7.V	:	64
Circumfer- ence above middle point,	. :	:	:	:	:	7,16	716	611	7	63 818	7,25	611	1/2	7.28	611	:	7	5.2	:	:	:	$7^{\frac{1}{16}}$
Circum- terence above burr.	6	:	÷	93	88	93	98	9,7	9.4	Son	See	6_{18}^{5}	916	8.07	ex ex	:	95	7 50	7.3	9 1-1X	÷	IOJ
Cheum- ference of bure, a	:	:	10	IO3	01	1111	IOS	11	11	46	10%	915	III	10.04	${\rm IO}_{1^6}^5$	93	12	6	20.	IOI	:	12,3
Length along curve.	9†	46	9†	*** ***	55	4514	4513	4514	452	45 8.8	4518	4513	4518	45.27	45‡	45‡	+5°	45	45	44+x	444	443
Weight avoirdupois.	.: est	:	:	:	:	हैं हैं ।	ë11 61	S 61	233	:	233	20 S	20 6	17.05	8 61	:	28 10	:	:	:	ŧ	20 4½
Number of points.	21	££,	81	01	10	10	1,4	16	41-	+1	켮	1.2	1.2	- 20	† _I	15	-22	+1-	11-	1.4	14	22

n- Count Tassilo Festetics.		ry Count Béla Széchényi.	Transylvania S. H. Whitbread.	n- Archduke Frederick.	ary Prince Philip of Saxe-Coburg	ర	Jeno Kund.	. Count Fer. Nádasdy.	J. Hamilton Leigh.	. Count Rudolf Erdödy.	. F. Pausinger.	. Count Tassilo Festetics.	. A. von André.	. Count Tassilo Festetics.	. Count B. Keglevich.	. Count László Májláth.	. Count Henry Fünfkirchen.	. G. Jankovich.	. Count Rudolf Erdödy.	. Count Bombelles.	. Archduke Frederick.	. Prince E. Demidoff.	² Brow-points 20 in. long.
S.W. Hun-	gary Carpathians	N. Hungary	Transylva	S.W. Hun-	gary N. Hungary	Carpathians	Do.	Hungary	Sesawski	Hungary	Do.	Do.	Galicia	Hungary	Do.	Do.	Do.	Do.	Do.	Szilvás	Hungary	Galicia	C1
:	÷	:	:	352	÷	:	:	:	:	:	:	:	÷	:	484	446	565	:	458	:	363	:	
:	44½	:	:	÷	:	:	:	:	421	;	:	:	36	:	i	:	365	:	÷	:	÷	50 <u>1</u>	specimen.
:	283	:	40	:	:	:	:	:	364	:	:	25.12	$29\frac{1}{2}$:	:	:	293	:	1.68	:	;	434	1 "Picked•up" specimen
:	143	÷	:	:	÷	:,	:	:	25\$:	į	90.98	15	:	:	:	47 TG	÷	9.19	i	į	38	1
:	74	:	7000	.:	:	:	:	:	54	:	:	7.64	64	:	:	:	:	:	8	:	:	9	
12.21	C.144	8.07	:	63.	7.18	89.4	68.9	64	:	6.64	7.28	12.23	7 €	8.27	718	:	886	60.4	11	:	73	:	pointers.
50.6	5.3	6.49	:	$7^{\frac{1}{8}}$	611	89.4	7.28	:	:	60.4	60.4	:	64	7.28	711	73	716	69.9	8.1	:	72	:	s are uneven
18.1	to₁	9.45	:	$9\frac{1}{8}$	9_1^7	6.84	10.24	105	:	8.46	8.27	8.03	:	8.07	00 rejao	10 3	84	8.27	6.8	8.5	916	:	se specimen
6.05	112	10.63	;	11 3	105	11.41	14.11	108	:	10.04	10.43	10.02	11	10.04	$\frac{9}{2}$ 16	$12\frac{1}{4}$	1 6	9.84	10.4	:	105	:	Many of these specimens are uneven pointers.
44.49	443	44.46	443	44 ¹ / ₈	44 ¹ / ₈	44.09	44.09	44 ³	44	43.7	43.7	43.6	$43\frac{1}{2}$	43.31	4216	$42\frac{15}{16}$	$42\frac{1}{16}$	16.24	42.8	42.7	$42\frac{1}{2}$	$42\frac{1}{2}$	
15.73	242	21.91	i	18 3	18 4½	17.38	18.37	:	÷	19.14	20.24	0 81	:	9.41	$20 ext{ } 1\frac{1}{2}$	$22 0\frac{1}{2}$	•	90.91	20.5	I 6I	20 13	:	- Owner's measurements.

Owner.	Marquis Pallavicini.	Count Széchényi.	Count Fer. Nádasdy.	Count Jose Hoyos.	Sir Clement Hill.	Archduke Frederick.	Count László Májláth.	E. N. Buxton.	Count Henry Coudenhove.	British Museum.	Archduke Frederick.	Do.	Do.	Count Fer. Nádasdy.	II.R.H. the Duc d'Orléans.	Prince Philip of Saxe-Coburg		Prince Nicholas Ghika.	Count Michael Esterhazy.	J. D. Cobbold.	H.R.H. the Duke of Saxe-Coburg and Gotha.
Locality.	Rapoli .	Galicia .	Carpathians	Munkaes .	Styria .	Hungary .	Do	Galicia .	۲.,	Germany .	Hungary .	Do.	Do.	Do.	Do	Do	Do	Rumania .	Hungary .	Do	Tyrol .
Weight of stag.	lbs.	:	583	:	:	:	:	:	÷	:	391	429	330	i	÷	:	552	:	÷	:	i
Spread.	÷	:	:	:	32‡	:	:	40	:	:	:	:	:	:	:	:	:	:	:	44	:
Widest inside.	:	:	:	:	$30\frac{1}{8}$:	:	$35\frac{1}{2}$	÷	254	:	÷	:	:	32	$31\frac{1}{8}$:	$31\frac{1}{2}$:	352	273
Tip to Tip.	:	:	÷	:	117	:	:	:	42	:	:	:	:	:	$22\frac{1}{2}$	÷	:	283	:	$29\frac{1}{2}$	204
Circum- ference between bez and trez.	:	:	:	:	53	:	:	:	÷	5,4	:	:	:	:	5.	÷	:	` :	:	$5\frac{1}{2}$	70
Circumfer- ence below crown.	63	:	89.4	:	:	63	63	÷	:	:	7	8.	611	20.8	:	9,16	8.27	© © €	:	:	:
Circumfer- ence above middle point.	. :	÷	60.4	:	:	:	i	i	÷	:	101	72	73	60.4	:	73	60.4	:	$6_{\overline{1}^{5}_{\overline{6}}}$:	:
Circum- ference above burr.	SS PA	8.5	10.54	916	53	S	93	i	:	:	S	9,16	9,16	9.52	:	TOI	10.63	:	Sit	i	:
Circum- ference of burr.	01	1.6	19.11	:	7	97	56	÷	SS	:	TOI.	Iol	101	10.54	÷	:	12.21	:	103	:	:
Length along curve.		42.33	42.13	1.74	45.00 pt	12.2	+ C1 -4/2	+ +	+	1-1/2,	の子	#I+	414	41.73	413	41	40.04	408	401,8	403	40}
Weight avoirdupois.	Ibs. og.	:	17 6	s s ₁	:	:	:	:	18 0	:	18 3	22 11	19 21	92.81	;	20 0	10.12	:	18 3	123	:
Number of points.	21.	30	91.	-20	-10	81-	<u> </u>	12	17	12	18	81	1.8	-18	12	+ I -	-12	11-	26	II	-13

Agarév, S.W. Count Tassilo Festetics.	Hungary. Archduke Joseph Augustus.	Do. St. George Littledale.	Gotha . H.R.H. the Duke of Saxe-	Moravia . G. D. Whatman.	Germany . Sir Edmund G. Loder, Bart.	Hungary . A. von André.	Do. A. N. Hall.	Do. Prince Philip of Saxe-Coburg	Iun- Cc	Hungary . The German Emperor.	Russia . H.R.H. Prince Arthur of	Upper J. Hamilton Leigh.	Tennal a H.R.H. the Duc d'Orléans.	Rominten, H.I.M. the German Em- N.E. Ger- peror.
:	455	÷	:	:	:	:	:	433	:	:	:	:	:	342 (clean)
÷	:	$33\frac{3}{4}$	49	45‡	443	$37\frac{1}{2}$	372	:	:	$53\frac{1}{2}$	$39^{\frac{3}{4}}$:	:	443
:	:	264	28	$33\frac{1}{2}$	$36\frac{1}{2}$	304	33	:	:	:	$32\frac{1}{2}$	214	$18\frac{1}{2}$:
÷	:	173	:	$28\frac{1}{2}$	$29\frac{1}{2}$	$21\frac{1}{4}$	$31\frac{3}{4}$:	:	:	$27\frac{3}{4}$	*	12	:
:	:	5	:,	$6\frac{1}{2}$	5.3	7 3	64	:	:	i	9	452	4	:
:	$9_{\mathrm{T}^{3}}$:	:	÷	÷	725	÷	8,5	⊗ repo	:	:	00	:	÷
:	$7^{\frac{1}{16}}$	÷	:	:	:	$6\frac{1}{2}$:	SO rupo	73	:	:	:	:	÷
8.10(?)	$9\frac{1}{16}$	÷	÷	÷	:	94	÷	104	9_{1}^{1}	:	:	:	:	:
:	₹01	:	IO	:	÷	10	:	$12\frac{3}{16}$	$\Pi \Pi_{\overline{1}\overline{6}}^{1}$	103	:	÷	÷	÷
40.10	4016	40	40	40	40	$39\frac{1}{2}$	$39\frac{1}{2}$	384	$38\frac{1}{4}$	$37\frac{1}{2}$	354	35	$31\frac{1}{2}$	30
18.50	20 42	:	:	:	:	:	143	$22 0\frac{1}{2}$	21 13	:	:	10.7	:	₹o 61
-20	20	13	81-	10	13	1 <u>5</u>	IO	-14	-22	-24	12	-12	IO	-44

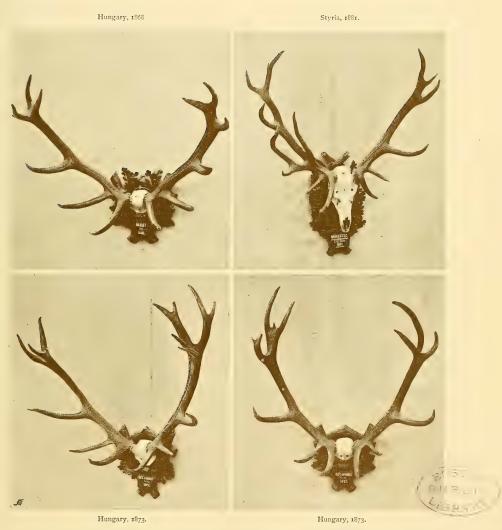
- Owner's measurements. Many of these specimens are uneven pointers.

many.

The late Viscount Powerscourt informed us that the 18 stag heads in the entrance hall at Powerscourt, mounted on papier-maché heads, were bought at Munich in 1863, by the advice of the late Count Arco-Zinneberg, the owner of the famous collection in the Wittelsbacher Platz at Munich. The hall in which Count Arco-Zinneberg's collection hangs contains upwards of 2500 heads of German red-deer and roe-deer of extraordinary weight and size, forming, with the one exception of the King of Saxony's collection at Moritzburg, near Dresden, perhaps the finest in the world. Count Arco became so well known as a collector that every fine specimen was brought to him for purchase. Count Erbach's collection at Erbach in the Odenwald is also one of the finest in Germany.



Antlers of Carpathian Red Deer in the Collection of Sir Edmund G. Loder, Bart.



Carpathian Red Deer heads belonging to His Imperial Majesty the Emperor of Austria.

Eastern Red Deer heads in the possession of His Imperial Majesty the Emperor of Austria.

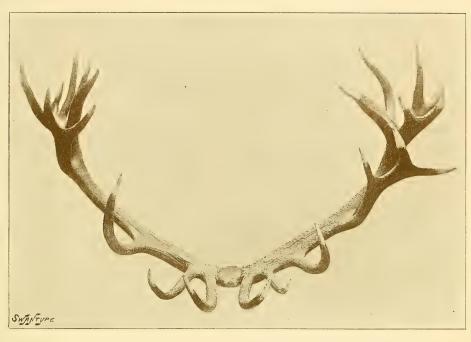
Specimens from the Plains of Hungary.

	Locality.	Szent Kiraly.	Do.	Babat,	Szent Kiraly.	Do.	Do.
erence	of Burr,	:	:	6	82	:	i
Circumference	of Antler.	7.‡	543	$\frac{89}{100}$	55 F	§ 9	9
Widest	Inside. Outside.	318	32	42.}	$33\frac{1}{2}$	$35\frac{1}{8}$	41
Wid		33	283	352	324	27	314
	Tip to Tip.	213	153	352	$29\frac{1}{8}$	213	258
Length.	Outside Burr to curve, highest point,	358	34	36	353	36	34
I	Outside curve.	415	40g	40}	393	393	374
	Tips.	6+7	9+9	6+7	7 + 10	9+8	7+8
	Date.	24th September 1874	28th ,, ,,	6th October 1868	1873 7+10	7th ,,	:

Specimens of the Mountain Form.

Brachberg (Upper Austria)			Mürzsteg, do.		
∞	÷	÷	:	÷	:
7	4.7	9	73	89	9
$23\frac{7}{8}$	÷	28	405	÷	25∓
275	$32\frac{1}{2}$	313	$31\frac{T}{8}$	27	234
$12\frac{1}{8}$	18	248	27.‡	144	143
33	28	314	30₹	31‡	33
1413	41,8	37#	364	36	343
5+5	4+4	5+4	10+7	9+9	7+8
8th August 1892	1st October 1885	30th September 1885	2nd October 1881	3rd ,, 1884	5th ,, 1889

¹ This is the finest head of Alpine Red Deer known.



Antlers of German Red Deer. From a specimen in the Castle at Moritzburg. After Dr. A. B. Meyer.

Ancient Continental Specimens.

Length (on curve)	Circum- ference.	Tip to Tip.	Spread.	Points.	Locality.	Owner.
-47 1	9		75 8	14+14	?	H.M. the King of Saxony, Moritzburg.
$-46\frac{1}{2}$	82 above trez	5 ft. 21/4		22	3	Count Erbach-Erbach.
•••			inside	22	Switzerland	. Do.
$39\frac{1}{2}$	$6\frac{1}{2}$	22	$3I_{\frac{1}{2}}^{\frac{1}{2}}$	6+6	Germany .	. Viscount Powerscourt.

⁻ Owner's measurements.



Skull and Antlers of Eastern Red Deer shot in the Western Caucasus by Mr. St. George Littledale.

Length of Antler, 45 in.

E.—EASTERN RED DEER or MARAL (C. elaphus maral).

In this race of the red deer, which may intergrade with some of the western races by means of the Carpathian form, the height at the shoulder reaches to about $4\frac{1}{2}$ feet, and the build is stouter, the neck thicker, and the face in the hinds longer and more pointed than in typical red deer. The summer coat of immature animals is very generally marked with numerous yellowish spots, and at all ages is much less red than in the British race, being, in fact, grey in September. The colour of the winter coat is dark slaty grey on the back, with the rump-patch of a very bright yellow, and a large amount of black on the shoulders, thighs, and under-parts; this blackness of the under-parts also characterising the summer coat. The large and massive antlers are generally less complex than those of the western races, the number of points being seldom more than eight on a side, and frequently only six; while the bez-tine, which may be wanting, is often shorter than the long and

upwardly curved brow-tine, and the fourth tine is generally more distinct from the crown. The average weight is given as about 560 lbs.

The typical locality of the maral is the Caspian provinces of Northern Persia, whence this or allied races extend into the Crimea, Asia Minor, and so on into Transcaucasia, the Caucasus, and probably Circassia. It is noteworthy that specimens from the Caucasus have shorter faces than those from Northern Persia, and thus approximate to the western types. Sportsmen call this race the Hungarian red



Antlers of Eastern Red Deer from the Caucasus, in the Collection of Sir Edmund G. Loder, Bart.

deer, but this is scarcely legitimate, as Hungary is not the typical locality. (For other specimens, see p. 18 et seq.) The Crimean red deer have very massive, few-tined antlers.

Length on out- side curve.	Circum- ference.	Tip to	Widest inside.	Spread.	Points.	Locality.	Owner.
$48\frac{3}{4}$	64	34	36	$42\frac{1}{2}$	8+6	Asia Minor .	H. O. Whittall.
$48\frac{1}{2}$	6	30	41½		5+6		H.R.H. the Duke of Saxe-Coburg and Gotha.
$48\frac{1}{2}$	7‡	(single	antler)	•••	12		British Museum (Lord A. Hav).
48	71				•••	Caucasus	St. George Littledale (Liverpool Museum).

Length in out- side curve.	Circum- ference.	Tip to Tip.	Widest inside.	Spread.	Points.	Locality.		Owner.
471	7‡	33½	431	543	10+9	Persia? .		St. George Littledale.
47\$	52	182	361	411	6+5	Caucasus .		Sir Edmund G. Loder, Bart.
$46\frac{1}{4}$	58	ıS	33		8+8	Do		British Museum.
-464	65		39		8+6	Asia Minor		F. E. Whittall.
45½	5 2	42 <u>3</u>	49	52	6+6	Caucasus .		S. H. Whitbread.
$-45\frac{1}{2}$	$S_{\frac{1}{8}}$	65‡			1.4	Do		Grand Duke Mikhael.
$45\frac{1}{2}$	7‡	323	401	46	8+8	Do		Prince E. Demidoff.
-451		171	31½	$39\frac{1}{2}$	10+8	Do		J. C. Phillips.
1 45 ½	74				9+6	Asia Minor		Sir Edmund G. Loder, Bart.
² -45	S	36	42		11+10	Caucasus .		Prince E. Demidoff.
45	6‡	301	$3S_{\frac{1}{2}}$	$44\frac{1}{2}$	7+6	Asia Minor		H. O. Whittall.
$44\frac{1}{2}$	63	31	$39\frac{1}{2}$	$47\frac{1}{2}$	8+7	?		Duke of Bedford.
44½	$7\frac{1}{8}$	19‡	26	36 1	7+6	Asia Minor		F. W. Baker.
441	6\$	(single	antler)		9	Do.		British Museum (C. G. Danford).
44	$5\frac{3}{4}$	$28\frac{3}{4}$	36	$40\frac{1}{2}$	8+7	Ak'Dagh .		J. L. Rees.
43½	$6\frac{1}{2}$	26 <u>3</u>	35 ³ / _±	$46\frac{1}{2}$	10+8	Do		D. Forbes.
431/2	6		40	•••	8+6	Asia Minor	٠	M. Le C. Findlay.
$43\frac{1}{2}$	54	16	28		6+6	Crimea .		Earl of Dunmore.
43	54	38	$39\frac{3}{4}$	49	7+7	Ak Dagh .		J. W. Williamson.
43	5‡	$22\frac{3}{4}$	$32\frac{3}{4}$	$37\frac{1}{2}$	7+6	Do		H. Williamson.
421	6	224	31	36辈	6+6	Do		H. O. Whittall.
42	6‡	28	$33\frac{1}{2}$	$44\frac{1}{2}$	9+8	3		R. A. Cooper.
42	6	261	$34\frac{1}{2}$	42	7+6	Ak Dagh .		T. Bowen Rees.
42	61	24	30	35	7+7	Asia Minor		Capt. J. B. Jenkinson.
37	51	317	343	40%	7+6	N. Persia .		Capt. C. T. Daukes.
-37	5 }	$2I_{2}^{1}$	30		14	Macedonia		H. J. Elwes.
35	54	15	25	$37\frac{1}{2}$	7+7	Persia .		Major P. M. Sykes.

- Owner's measurements.

1 Weight, 23 lbs.

2 Estimated weight, 746 lbs.



North African Red Deer: Sir Edmund G. Loder's Specimen.

F.—N. AFRICAN RED DEER (C. elaphus barbarus).

For characters, see page 2.

Length on out- side curve.	Circum- ference between bez and trez.	Tip to	Widest inside.	Spread.	Points.	Locality.	Owner.
38 7	58	$27\frac{1}{2}$	28	36	6+5	North Africa	Sir Edmund G. Loder, Bart.
$36\frac{1}{2}$	$4\frac{3}{4}$	$22\frac{7}{8}$	$28\frac{3}{4}$		4±4	Do.	British Museum.
30½	34				4+3	3	Duke of Bedford.
241	34	20 ³ / ₄	2 I $\frac{1}{2}$		4+4	Tunis .	Major R. Rankin.



Skull and Antlers of Hangul or Kashmir Barasingha. Shot by Mr. P. B. Vander Byl.

The HANGUL or KASHMIR BARASINGHA (Cervus cashmirianus).

In this very distinct species the first, or brow, tine arises at a considerable distance above the burr, or coronet, of the antlers, instead of close to it, as in the red deer; the bez-tine is usually longer than the brow; the total number of points is generally only five a-side, although a third tine may occasionally be added to the normal terminal pair, thus forming an imperfect cup; and the beam of each antler is much curved in towards the middle line of the head. The terminal fork is placed obliquely. The tail is short, and not included in the light patch on the rump, which is very small; and the tuft on the hind cannon-bone is situated lower down than in the red deer. In winter the general colour of the coat is brown, brownish ash, or liver-colour, with the hairs speckled; the light area on the inner side of the buttocks being dirty white, with a blackish line on the inner sides of the thighs, the upper side of the tail black, and the lips, chin, and inner surface of the ears white or whitish. In the fawns the spotting is stated to remain much longer than in the red deer. In the pairing season the old stags squeal like wapiti, instead of roaring in red-deer fashion.

The hangul inhabits the forest-districts of the north side of the vale of Kashmir and some of the neighbouring valleys, at elevations ranging from 9000 to 12,000 feet in summer, but descending to about

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5000 feet in winter. The height at the shoulder varies from about 4 feet to 4 feet 4 inches; the average weight being about 450 lbs.

The pale-coloured *C. macneilli*, of Sze-chuan, and *C. m. kansuensis*, of Kan-su and Yun-nan, are nearly related deer.

The finest pair of antlers appears to be one given by Raja Gulab Singh many years ago to Colonel King, then commanding the 14th Hussars, at whose death they passed to Captain Prettyjohn of the same regiment. What became of these antlers the late Mr. A. O. Hume, who measured them at Meerut in 1852 or 1853, could not ascertain. The record stands, R. 52, L. 53½, measured along the curve inside. Girth, 10 inches at burr and 7 half-way between bez and trez tines. They were a wide-branching, symmetrical pair.

Length on out- side curve.	Circum- ference between bez and trez.	Tip to Tip.	Widest inside.	Points.	Locality.				Owner.
$-53\frac{1}{2}$	7			***					See above.
48	$6\frac{1}{8}$	14	331	6+5	Lidar Val	ley,	Kashm	ir	K. S. Laurie.
$47\frac{1}{2}$	6	22	39	6+6	Kashmir				P. B. Vander Byl. (See
-47	7 §	21	36	7 + 5	Do.				illustration, p. 32.) Bombay Natural History
47	$6\frac{3}{4}$	$2I_{+}^{1}$	363	5 ± 5	Do.				Society. Sir Edmund G. Loder, Bart.
47	6‡	30	$35\frac{1}{2}$	8+8	Do.				Duke of Wellington.
47	6	20	$34\frac{3}{4}$	6+5	Do.				LieutCol. H. R. Cook.
46	5 §	13	$34\frac{3}{4}$	5+5	Do.				Capt. W. F. Brayne.
45 ⁷ / ₈	8	35	4 I	6+6	Do.				British Museum (Hume Collection).
45 ⁵ / ₈	6	25^{3}_{4}	36	8+8	Do.				Sir Victor Brooke's Collection.
45½	61	162	34	6+5	Do.				Brig,-Gen. E. H. Molesworth.
451	5€	171	34	5+5	Do.				P. Radclyffe.
45	6₹	19	34	6+6	Do.				Lieut Gen. Sir R. Pole- Carew.
45	$5\frac{1}{4}$	$23\frac{1}{4}$	36	6+6	Do.				J. V. E. Lees.
45	6‡	23	40	4+4	Do.				Capt. H. F. Bidder.
44 ³	$5\frac{1}{2}$	${\bf I}7\tfrac{1}{2}$	33	6 + 6	Do.				Col. A. E. Ward.
-44 ³ / ₄	6	20	43	5 + 5	Lidar Val	ley			Queen's Own Corps of Guides.
$-44\frac{5}{8}$	$6\frac{1}{2}$	312	44 ³ / ₄	5+5	Kishengar	iga V	Valley		Do.
$44\frac{1}{2}$	6	$27\frac{3}{4}$	383	4+4	Sind Valle	ey, K	Kashmi	r	J. V. Phelps.
44	74	303	40 7	5 + 5	Do.				Major P. H.G. Powell-Cotton.
44	$6\frac{3}{4}$	231	$36\frac{1}{2}$	5+5	Do.		٠		Naval and Military Club.

⁻ Owner's measurements.

Length on out- side curve.	Circum- ference between bez and trez.	Tip to Tip.	Widest inside.	Points.	Ι	Locality.		Owner.
44	6	27	36	5 + 5	Kashmir			Hon. Walter Rothschild.
44	6 <u>3</u>	$34\frac{1}{2}$	$47\frac{1}{2}$	5+5	Do.			Major V. Rickard.
44	5 3	18	31	5 + 5	Do.			C. E. Bryant.
43 ³ / ₄	6‡	253	$37\frac{3}{4}$	6+5	Do.	,		Capt. A. E. Cathcart.
43 ⁰ / ₄	$6\frac{1}{4}$	ΙΙ	$32\frac{3}{4}$	7+6	Do.			A. Danson.
434	5 -	$1S_{\frac{1}{2}}$	29	5+5	Do.			C. H. Smith.
$43\frac{1}{2}$	$6\frac{1}{2}$	19	31	5+5	Do.	٠		Sir J. Prestcott Hewett.
$43\frac{1}{2}$	6	103	$32\frac{1}{2}$	7+6	Do.			A. Williams.
43½	6	314	38	5+5	Do.			Sir R. Douglas Powell, Bart.
$43\frac{1}{2}$	6	$15\frac{1}{2}$	2 9 ³ / ₄	7+7	Do.			Capt, C. M. Truman.
$43\frac{1}{2}$	$5\frac{3}{4}$	151	31‡	6+6	Do.			Capt. A. M ^c B. Woodside.
431	$7\frac{1}{2}$	$23\frac{1}{2}$	37‡	5+5	Do.			R.E. Mess, Roorkee.
43	$5\frac{1}{2}$	34	$41\frac{1}{2}$	5+4	Do.			His Majesty the King.
43	5₹	26§	$37\frac{7}{8}$	6+5	Do.			Martyn Kennard.
43	51/4	193	$34\frac{1}{2}$	6+6	Do.			Major F. W. H. Walshe.
12 1	$5\frac{1}{2}$	18	33∄	6+5	Do.			Major R. Baker-Carr.
424	$5\frac{1}{2}$	174	334	5+6	Do.			Major-Gen. H. D'U. Keary.
424	6	15	321	5+5	Do.			Major C. A. Vivian.
$42\frac{1}{2}$	61	$11\tfrac{1}{2}$	26 <u>3</u>	5+5	Do.			Capt. A. H. Wilson.
42	54	132	26½	5 ± 5	Do.			E. L. Phelps.
42	$5\frac{1}{2}$	20	$35\frac{1}{2}$	6+5	Do.			W. A. Conduitt.
42	6	22	34	5+5	Do.			Major W. Furnivall.
413	6	23	364	6+6	Do.			F. V. B. Witts.
413	57	23½	35	5+5	Do.			Major Kingsley Foster.
413	6	1 S ½	312	6 + 5	Do.			H. A. Attenborough.
414	5½	12	293	5+5	Do.			Major R. A. N. Tytler.
411/2	6	251	365	5 5	Do.			Col. F. H. Hancock.
41 2	$6\frac{1}{2}$	36	412	5 ± 5	Do.			C. Arthur.
418	5%	23	33½	6+5	Do.			Capt. H. C. H. O'Brien.
41}	6	158	29	7 · 6	Do.			P. W. Cobbold.
411	$5\frac{1}{2}$			6 - 3	Do.			Lady Jenkins.
41	51	23%	3.5	5+5	Do.			Hon. H. G. O. Bridgeman.



Skull and Antlers of Yarkand Stag. From specimen bequeathed by Mr. A. O. Hume to the British Museum.

The YARKAND STAG (Cervus yarcandensis).

This stag, which inhabits the Tarim Valley and Maralbashi in Eastern Turkestan, differs markedly from the hangul by the large and well-defined light rump-patch, which includes the tail, and by the general colour being light rufous fawn. The antlers are usually 5-tined, but by the development of a third snag to the crown may become (as in the figure) 6-tined. They differ from those of the hangul in that the terminal fork is placed at right angles to the middle line of the head so as to look directly forwards. The fifth

tine, which is generally inclined inwards, is larger than the fourth, and the whole upper part of the antlers is often bent forwards in the manner of those of the shou.

Length outside curve.	Cir um- ference.	Tip to	Widest inside.	Spread.	Points.	Locality.	Owner.
415	6	311	314	44	6+6	Maralbashi .	British Museum.
40]	54	234	314		5 4- 5	Do	British Museum (Hume Collection).
40	51	25	31		6+5	Do	E. L. Phelps.
303	6	241	25		7+6	Do.	British Museum (Hume Collection). See illus- tration.
39.]	57	161	2S ³ / ₄		6+6	Do	



Kashmir Barasingha Head.



Skull and Antlers of Sikhim Shou. From a specimen bequeathed by Mr. A. O. Hume to the British Museum.

The SHOU (Cervus wallichi).

A very large stag with antlers, at least in the Sikhim race, of the general type of those of the hangul, but larger, and with the beam bent suddenly forwards at the trez-tine, so that the upper half overhangs the face, the number of points being usually five. The browtine is less constantly longer than the bez, the fifth tine is large and inclined inwards, and the terminal fork looks almost directly forwards. In the typical race, which inhabits the neighbourhood of the Mansarowar Lake, Tibet, the white rump-patch is large, but it is smaller in the true shou (*C. wallichi affinis*), which inhabits the upper

part of the Chumbi valley and some of the neighbouring valleys in Bhutan. An identical or nearly allied deer is also found in the Tsan-po basin, near Lhasa.

Length on out- side curve.	Circum- ference.	Tip to Tip.	Widest inside.	Points.	Locality.		Owner.
$55\frac{3}{4}$	$6\frac{1}{2}$	171	403	7+6	Tibetan Frontier		British Museum (Hume Collection). See illustration.
$55\frac{3}{4}$	63	26½	44	5+5	Do.		British Museum (B. H. Hodg-son).
54 ⁸	6 §	215	37‡	5+5	Do.		British Museum (Dr. Campbell).
54 1	7 3	101	$35\frac{1}{2}$	5+5	Do.		His Majesty the King.
531	6 	30	45 ³ / ₄	4+5	Do.		British Museum (Hume Collection).
$-52\frac{1}{2}$	7	$18\frac{1}{2}$	38	5+5	Do.		Sir Edmund G. Loder, Bart.
52	8				Do.		Hon. Walter Rothschild.
50	6‡	21 ³ / ₈	35 1	8+6	Do.		H. J. Elwes.
49½	$7\frac{1}{2}$	38	45½	5+5	Do.		Col. J. Biddulph.
-49½		$39\frac{1}{2}$		5+4	Do.		Bombay Natural History Society.
-48	6	30	421	5+5	Chumbi Valley.		Lord Curzon.
-48	6 <u>3</u>	303	¹ 39	5+5	Tibetan Frontier		H. J. Elwes.
48	6 3	17	$34\frac{1}{2}$	6+5	Do.	H.R.H. the Duc d'Orléa	
47 š	5 §	308	$40\frac{1}{2}$	5+5	Do.		British Museum.

- Owner's measurements.

1 Spread.

THOROLD'S DEER (Cervus albirostris).

Thorold's deer is of the same approximate dimensions as the hangul, from which it is readily distinguished by the more flattened antlers, which have no bez-tine, and do not curve inwards, but are suddenly bent backwards at the point of origin of the trez; the total number of points being either five or four. Equally distinctive are the pure white muzzle and chin; the white inner surface of the ears; the reversal of the hair on the middle of the back, so as to form a kind of hump on the withers with the points of the hairs directed towards the neck; the low position and large size of the gland-tuft on the hind cannon-bone; and the shortness of the tail, which is included in the very large straw-coloured area of the buttocks. The general colour of

WAPITI 39

the coat is uniformly dark brown, with the hairs, which are remarkable for their coarse and brittle nature, minutely speckled. The antlers are smooth and white nearly throughout.

The Tibetan plateau, north of Lhasa, is the home of this fine species of deer, which was originally described by the late Colonel Przewalski under the scientific name given above. Subsequently two examples were obtained by Dr. W. G. Thorold, to the north-east of Lhasa, at an elevation of between 13,000 and 14,000 feet, which, under the impression that they indicated a new species, were named *C. thoroldi* by Dr. W. T. Blanford.

Length on out- side curve.	Circum- ference.		Widest inside.	Points.	Locality.	Owner.
47					N. of Lhasa .	British Museum.
$38\frac{1}{2}$	45	37	27	5+4	Central Tibet .	Hon. Walter Rothschild.
38	51	28	31	5+5	Do	British Museum.
1-36	$4\frac{1}{2}$	32	32	5+5	?	Indian Museum.

⁻ Owner's measurements.

The WAPITI DEER (Cervus canadensis).

Wapiti are large deer of the red deer group easy of recognition by the form of their antlers, which are of great size, carrying, when fully developed, more than five tines, curving backwards, and being much flattened in the upper half. They always have the bez-tine developed, but their most characteristic feature is the great size of the fourth tine, which is larger than any of the others, and, with the fifth, which is also long, forms a nearly regular fork; the fourth, fifth, and sixth tines being situated almost in the plane of the portion of the beam immediately below them, so that they more or less completely hide one another when viewed from the front aspect. The brow-tine rises close to the burr, and is nearly as long as the bez. The tail is extremely short; the light rump-patch is very large and includes the tail; the neck and under-parts are blackish; and the general colour of the summer coat is yellowish brown on the upper-parts.

Wapiti (known in America as elk) range from North America to North-eastern and Central Asia, the typical form being the Rocky Mountain wapiti. The height at the shoulder is about 5 feet 4 inches, and the weight from 700 to 1000 lbs.

¹ Bought at Darjiling, thither brought by Tibetans.

A.—ROCKY MOUNTAIN WAPITI (C. canadensis typicus).

Distribution.—N. America, east of the Rockies, inclusive of that range.

Length on outside curve.	Circum- ference between bez and trez.	Circum- ference of burr.	Tip to Tip.	Widest inside beam of horn.	Widest outside.	Points.	Locality.	Owner.
$64\frac{1}{2}$	8		31 ½	45	52	7+6	?	Sir Edmund J. Loder, Bart.
$03\frac{1}{2}$	S		39	$45\frac{1}{2}$	52	7 + 7	Wyoming .	H. A. C. Darley.
621	8	131		$46\frac{1}{2}$	$55\frac{1}{2}$	17	Do	J. G. Millais.
62	7.3		334	508		7 + 7	Snake River, Colorado	Ernest Farquhar.
61	8		354	$45\frac{1}{2}$	53 -	6+6	Bighorn Mts., Wyoming	Sir H. Seton-Karr.
öΙ	S		361	46.2	55	8 - 8	Do	Viscount Powers- court.
61	S					8+7	Do	Prince Nicolas Ghika.
601	S ₄			55		7 + 6	Do	E. Grant.
60 8	7.1		43	46‡		6+6	Do	Major C. C. Ellis.
60	81		36	$37\frac{1}{2}$	45	6+6	Do	W. Winans.
591	7		38	482	52	8+7	Do	L. E. Sackville West.
503	$S_{\frac{1}{2}}$	13	371	47		S + S	S.E. Wyoming.	His Majesty the King.
59 1	$S\frac{1}{2}$	16‡		43	53	7+6	;	J. G. Millais.
59	612		301/2	$45\frac{1}{2}$	511	6+6	Rocky Mts	T. J. Burrough.
59	7.4		39	46	53	9+7	Wyoming	Sutton Timmis.
582		hetween ow and bez.		463	50½	10+7	Do	Lord Hythe.
55		9115	42	471		7+6	Do	A. H. Straker.
55	73		431	49		9+8	Do	W Moncreiffe.
573	7		36	432	47	6+6	;	R. Fleming Crooks.
574	63		241	355		6+6	Montana	Capt. Abdy.
571		92	32	421		7 - 7	Do	Sir Humphrey de Trafford, Bart.
57	ϵ_i	10	$52\frac{1}{2}$	55	57 ½	6+6	Do	T. D. M. Cardeza.
57	7 1					7+7	Do	Count F. Trautt-
57	7 =	15	53	$49\frac{1}{2}$	61	8+9	Montana	Sir Edmund G. Loder, Bart.
57	7 Å		35k	411		6+6	Yellowstone Park	British Museum.
5%	71		37	$39\frac{1}{2}$	43½	7+6	?	Duke of Bedford.
563	6:		34	49		6+6	Montana	Andrew Jameson.
56	7		31	39	422	6+7	Wyoming .	J. V. Colby.



Head of Rocky Mountain Wapiti.

Length on outside curve.	hatwan	Circum- ference of burr.		Widest inside.	Widest outside.	Points.	Locality.		Owner.
56	7			50½	51½	7+6	Wyoming.		Royal Automobile
55\$	7		43½	47 5		6+5	Do		Club. Major G. Dalrymple
55½	71		40	46‡	50	6+6	Do		White. P. B. Vander Byl.
55½	7		$29\frac{1}{2}$	$40\frac{1}{2}$	$45\frac{1}{2}$	6+6	Do		T. P. Kempson.
$55\frac{1}{2}$	$6\frac{1}{2}$		44	45½		6+6	?		A. H. Pollen.
558	$7\frac{1}{8}$		46‡			7+6	?		St. George Little-
55‡	6 §		431/2	47½	50½	6+6	Wyoming.	٠	dale. G. L. Harrison.
55	8			45½		7+6	Do		Major Maitland
55	7 1 8			$47\frac{1}{2}$		6+5	Do		Kirwan. E. N. Buxton.
55	7		52	50	54 ¹ / ₃	6+6	Do		W. E. T. Bolitho.
55	$7\frac{1}{2}$	• • •	38	47	$52\frac{1}{2}$	7 + 7	Do		Viscount Powers-
¹ 55	65					14	3		court. Duke of Bedford.
54 ³ / ₄	$6\frac{1}{2}$		50½	51	60	6+6	5		E. S. Crasten.
$54\frac{1}{2}$	7 3		37	431	48	7+6	Montana .		E. L. P. Burke.
$54\frac{1}{2}$						14	Colorado .		Sir Peter Walker, Bart.
$54\frac{1}{2}$	9			paln	nated	11+7	Montana (?)		G. Wrey.
$54\frac{1}{2}$	$6\frac{3}{4}$		28	37	46	6+6	?		F. I. Mitchell.
$54\frac{1}{2}$	63		43	$43\frac{1}{2}$	47	7 + 7	Wyoming.		Duke of Roxburghe.
54 ³ / ₈	61/2		383	441		7+6	Do		E. N. Buxton.
54 1	7 §	• • •	$49\frac{7}{8}$			9+7	Do		Hon. Walter Roths- child.
² 54	7 🕏			48		8+7	Do		Earl of Lonsdale.
54	$6\frac{1}{2}$		$43\frac{1}{2}$	444	$47\frac{1}{2}$	7+7	Do		H. H. Dutton.
54	78		43	42	45	8+7	Do		P. Niedieck.
54	7‡			48		7+8	Do		Earl of Lonsdale.
54	61		25	363	$42\frac{3}{4}$	6+6	Sierra Nevada		P. Grace.
54	73		48	44		12	?		M. P. Grace.
537	8		35	42	•••	6+6	•••		His Majesty the King.
532	71		27 1	$35\frac{1}{2}$	421	7+6	Wyoming.		P. Radclyffe.
531	7 5		34	39	473	8+7	Do		Rudolph de Gold- schmidt.
53½	73		47	497		8+7 palmated	Do		Ford G. Barclay.
53	61		36	40}	45	7+6	Do		Lord Falconer.

I Shed antlers weighed 20 lbs.

² Shot by Sir G. Gore, Bart.

OWNER'S MEASUREMENTS.

Length on outside curve.	Circum- ference between bez and trez.	Circum- ference of burr.			Widest outside.	Points.	Locality.	Owner.
66	•••				60	6 + 6	Wyoming .	J. Darley.
65	7 §				40	7+7	Laramie Plains, Wyoming	Schoverling, Daly, and Gales.
$64\frac{3}{4}$		$9\frac{3}{4}$	$4I\frac{1}{2}$	49	***	6+7	Wyoming	0 1 7 7 77 1
64‡	8			48		7+7	N.W. Wyoming	A. Rogers.
63\frac{3}{4}	8‡	•••	491	$48\frac{1}{2}$		7+9	North Prong .	Frank Cooper.
631/2	8 5		$34\frac{1}{2}$	$50\frac{1}{2}$	64	6+6	Wyoming	J. C. Phillips.
59½		$10\frac{1}{2}$		$37\frac{1}{2}$	59		Bighorn Mts	Sir Savile Crossley, Bart.
$58\frac{1}{2}$	$8\frac{1}{2}$			$44\frac{1}{2}$		6 + 6	Do	J. D. Cobbold.
$58\frac{1}{2}$	81		48		50	6 + 6	3	F. B. Tolhurst.
58		10	41		$49\frac{1}{2}$	7 + 7	Do	American National Collection.
58	$10\frac{1}{2}$	12				7 + 8	?	P. F. Collier.

B.—WEST AMERICAN WAPITI (C. canadensis occidentalis).

Apparently very closely allied to the typical Rocky Mountain race, but with the head, neck, and limbs blacker in the winter dress. The antlers show considerable tendency to cupping and palmation, and in some cases the portion above the fifth tine is aborted. The range of this form extends from British Columbia and Vancouver to Oregon.

Length on titsid curve.	between	Tip to Tip.	Widest inside.	Widest outside.	Points.	Locality	Owner.
52	$S\frac{1}{2}$	37	40		6+6	Vancouver .	Barclay Bonthron.
21 ⁴	63	35	$36\frac{1}{2}$	391	6+6	Do	J. M. Hanbury.
-4ò‡	6½	38	461		10+7	Do	A. E. Leatham.
45	74	$32\frac{3}{4}$	361	$34\frac{1}{2}$	6+7	Do.	. W. R. Thompson.
47	63	37	34	$4I\frac{1}{2}$	S + 7	Do	J. M. Hanbury.
-45	7.‡	37	37		7+8	Do	. Clive Phillipps-Wolley.
-45	63	37	39	42	6+4	Do	. J. C. Phillips.
-44 ¹ / ₂		332	28	32	6+6	Do	Capt. C. R. E. Rad- clyffe.

Two other forms of wapiti have been described from North America, namely, *C. canadensis merriami*, of the White Mountains, Arizona, and *C. canadensis nannodes*, of the San Joaquin Valley, California. The latter is a small, pale-coloured race, with much white on the ears, a small rump-patch, and the front of the legs and feet golden fulvous.

WAPITI 45



Skull and Antlers of Tien Shan Wapiti, shot by Mr. P. Church at Tarbagatai.

C.—TIEN-SHAN WAPITI (C. canadensis songaricus).

Judging by the mounted specimen in the British Museum and numerous examples of the antlers, this race differs from the typical wapiti by the rump-patch being narrower, more orange in colour, and not including the middle line of the tail, which is coloured like the back. There is more black on the borders of the rump-patch, the thighs, and the flanks, and the general colour is greyer. The antlers are very large and have the fourth tine shorter and stouter. This wapiti inhabits the Tien-Shan range in the neighbourhood of Kulja; it was first described by Dr. Severtzow under the name of *C. maral*, var. *songarica*, and subsequently by Dr. Blanford, on

the evidence of detached antlers obtained by the Second Yarkand Mission, as C. eustephanus. Weight (W. Winans), 837 lbs.

Length on cutside curve.	Circum- ference.		Widest inside.	Spread.	Points.	Localit	:y•		Owner.
60	$S_{\frac{1}{2}}$	621	$45\frac{1}{2}$	70	10+9	Tien Shan		٠	Capt. J. N. Price Wood.
503	7‡	$37\frac{1}{2}$	$37\frac{1}{2}$	$40\frac{1}{2}$	6 + 6	Do.			G. L. Harrison.
1 55	S				6+7	Bought at K	Kashgar		Earl of Northbrook.
54	71	49	463	$50\frac{1}{2}$	7+6	Tien Shan			P. Church.
-53	9 burr				8 + 6	3	?		American National Collection.
53	63	$30\frac{1}{2}$	39	46	6+6	Tien Shan			J. V. Phelps.
53	6₹	46	4 I	49	8+8	Do.			Duke of Bedford.
52	61	$24\frac{1}{2}$	311		8+7	Do.			Capt. J. F. Turner.
52	6	451	401	45	6+6	Do.		٠	Capt. the Hon. G. H. Douglas Pennant.
51	$6\frac{1}{2}$	39₹	403	50g	6 + 5	Do.			A. Ezra.
51	63	431	$44\frac{1}{2}$	46 <u>3</u>	7+6	Do.			St. George Littledale.
51	$6\frac{1}{2}$	$44\frac{1}{2}$	38	49	10+8	Do.			C. C. Tower.
51	8	$44\frac{1}{2}$	51	55	8+7	Do.		٠	Col. H. Appleton.
504	6½	413	$42\frac{1}{2}$	45	6+6	Do.			C. H. Bury.
50	63	39	43	51	6+6	Do.			Lord Osborne Beauclerk.
50	65	26	35	38	7+6	Do.			A. Bayley-Worthington.
49½	71	28	33	$41\frac{1}{2}$	8+7	Do.			T. P. Miller.
49‡	6§	453	54	55	6+6	Do.			Capt. J. N. Price Wood.
-49		423		48	6+6	Do.			LtCol. H. M. Biddulph.
481	$6\frac{1}{2}$	391	$42\frac{1}{2}$	45½	6+6	Do.			Major A. D. Greenhill-Gardyne.
471	63	421	44 3	$47\frac{1}{2}$	6+6	Do.			LieutCol. G. E. Pereira.
47	63	244	321	41	7+6	?			Col. H. G. C. Swayne.
46)	6	36	40½	43	6+6	?			S. W. Carpenter.
46,5	7	37 ½	392	44	8+7	Tien Shan			P. F. Hadow.

⁻ Owner's measurements.

¹ Shed antlers bought by the late Sir Douglas Forsyth.

WAPITI 47

D.—BAIKAL WAPITI (C. canadensis sibiricus).

Antlers less massive and lighter coloured than those of the Tien-Shan race, with the fourth tine inclined outwards instead of inwards, and having only a slight bend at the tip, and with the beam at this point curving gradually inwards and backwards, so that the backward inclination is less marked than in the latter. Typically from the Sayansk and Baikal Mountains west of Lake Baikal. Also known as *C. c. asiaticus*.

	Circum- ference.		Widest inside.	Spread.	Points.	Locality.	Owner.
50 ³ / ₄	6	$29\frac{1}{2}$	$38\frac{1}{2}$		8+7	? Altai	Duke of Bedford.
$48\frac{1}{2}$	$7\frac{3}{4}$		single	horn	7	?	British Museum.
$46\frac{1}{4}$	6‡	34	$40\frac{1}{2}$		6+6	Upper Yenisei Valley	J. C. Phillips.
$45\frac{1}{2}$	6‡	$34\frac{1}{4}$	$39\frac{1}{2}$	47	5 ± 5	? Altai	H. J. Elwes.
45	6	51½			6+6	Upper Yenisei Valley	Sir Edmund C. Loder, Bart.
43 ³ / ₄	6‡	37	35		6+6	Do.	Dublin Museum.

E.—BACTRIAN WAPITI (C. canadensis bactrianus).

Named on the evidence of a specimen formerly living in the Zoological Gardens at Moscow, which was at first regarded as related to the shou, although its wapiti-affinities were subsequently revealed by specimens from Chenkend, Turkestan, the head of one of which is now mounted in the British Museum. The colour is very light grey, and the dark markings on the lips differ from those of other wapiti. Has also been named *C. hagenbecki*.

Distribution.—Chenkend and adjacent districts. The antlers of the British Museum specimen are somewhat malformed, and have therefore not been measured.

Length on outside curve.	Circum- ference,	Tip to Tip.	Widest inside.	Spread.	Points.	Locality.		Owner.
40	6	267			6 + 4	Turkestan		Duke of Bedford.

F.—MANCHURIAN WAPITI (C. canadensis xanthopygus).

Antlers of a shorter and stouter type than in the Tien-Shan wapiti, with the fourth tine relatively smaller in immature specimens, and the portion above it less developed at all ages. In the 5-tined antlers of sub-adult stags the tips of the fourth and fifth tines curve towards one another like crabs' claws. General colour in winter brownish grey, in summer bright reddish brown, with the dark winter mane and under-parts of other wapiti. Also known as *C. bedfordi*.

Distribution.—Northern Manchuria in the Upper Ussuri district.

Length cutside curve.	Circum- ference.	Tip to Tip.	Widest inside.	Spread.	Points.	Locality.	Owner.			
41‡	6::	23	33		6+6	Upper Yenisei Valley	J. C. Phillips.			
401	6.1	23	32\frac{3}{4}	35₹	7+6	Do.	Sir Edmund G. Loder, Bart.			
-351	75				6+6	?	American National Collection.			
331	5	23	264	2S ¹ / ₄	6+5	N.E. Manchuria	A. J. A. Douglas.			
33	5	25	24	26½	5+5	Do.	Capt. H. L. Archer-Houblon.			
33}	54	181	2 I ½		6 ÷ 6	?	H. J. Elwes.			
32]	51	261	26 ³ / ₈	29 \frac{7}{8}	7+5	?	Do.			
314	6	17	25%	29	8 - 7	?	Duke of Bedford.			
	- Owner's measurements.									

Luchdorf's Wapiti (*C. luchdorfi*) appears to have been founded on aged individuals of this race. The type specimens came from Transbail: alia, and were probably brought from the Bureatish Steppe of Northern Manchuria.

The Obi Wapiti (C. c. biedermanni) comes from Lake Teletzh at the source of the Obi, and Barnoul, lower down the same valley.



Skull and Antlers of Japanese Sika. From a specimen in the Collection of Sir Edmund G. Loder, Bart.

The SIKA DEER (Cervus [Pseudaxis] sica).

The Japanese sika deer is the typical representative of a group of deer in which the antlers are shorter and simpler than is usually the case in the red deer group, and have generally four tines, including a trez, but lacking a bez. The coat is spotted, at least in summer, and there is a black-bordered white area in the region of the tail, which is relatively long. They constitute the subgenus Pseudaxis. In the typical species the tail is white at the tip, but black above for at least some part of its length; and the gland on the hind cannon-bone is covered with white hairs. The coat is chestnut-red with numerous white spots in summer, and browner, with no (or only indistinct traces of) spots in winter. These deer are distributed over Northern China, Manchuria, Japan, and the Liu Kiu Islands, where they are represented by two or three races differing chiefly in size. In the Japanese deer (C. sica typicus), which inhabits Japan and Northern China, the height at the shoulder varies from about 2 feet 8 inches to 2 feet 10 inches, whereas in the Manchurian deer (C. sica manchuricus) it reaches 3 feet 3 inches. The Liu Kiu race is not yet named. Both the Japanese and the Manchurian races have been acclimatised in English and Irish

parks. Weight (W. Winans), 180 lbs.—12 stone clean (Marquis of Waterford).

A.—JAPANESE SIKA (C. sica typicus).

Length on out- side curve.	Circum- ference.	Tip to Tip.	Points.	Locality.	Owner.			
-28 3	3½	18‡	4+4	Japan	. J. C. Phillips.			
26½	33	191	4+4		British Museum.			
$25\frac{1}{2}$	5	$17\frac{3}{8}$	4+4	Japan	. Sir Victor Brooke's Collection.			
253	41/8	201	4 + 4	Do	. Sir Edmund G. Loder, Bart.			
$23\frac{1}{2}$	48		4+4	Bred in England	. W. Winans.			
$22\frac{1}{2}$	4	16	5+4	Do	. H.R.H. the Duc d'Orleans.			
1 22 ¹ / ₄	3 3	$I2\frac{1}{2}$	4+3	Bred in Ireland .	. Marquis of Lansdowne.			
22	4	163	5+4	Do	. Sir Victor Brooke's Collection.			
$2I\frac{1}{2}$	33	133	4+4	Do	. Hon. Walter Rothschild.			
201	$3\frac{1}{2}$	${\bf I}{\bf 2}\tfrac{3}{4}$	4+4	Bred in England	. H.R.H. the Duc d'Orleans.			
20	$3\frac{1}{2}$	${\rm I}2\tfrac{3}{4}$	4+3	Do	. W. Winans.			
191	31/2	173	4+4	Bred in Ireland .	. V. Brooke.			
I 7 4	3	16‡	4+4	Woburn	. Duke of Bedford.			
16	$3\frac{1}{2}$	$13\frac{1}{2}$	3 + 3	Bred in Ireland.	. C. E. Russell.			
163	3	98	4+3	Do	Hon. John Ward.			
2 I $5\frac{1}{2}$	2 %	144	4+4	Do	Marquis of Hamilton.			
		1	12 stone	clean.	² Weight, 143 lbs. as it fell.			

B.—MANCHURIAN SIKA (C. sica manchuricus).

Length on out- oide curve.	on out- Circum- Tip to ride ference. Tip.		Points.	Weight.	ht. Locality.			Owner.	
-26	41	132	4+4		Manchuria			Paris Museum.	
23	31	184	4 · 4		Do.			Duke of Bedford.	
23	51	157	3 · 4	164 lbs.	Do.			W. Winans.	
201	3 ½	16	4+4	153 lb.	Do.			Do.	

Owner measurements.

The FORMOSAN SIKA (Cervus [Pseudaxis] taëvanus).

Nearly allied to the typical sika, but distinctly spotted in winter, when the coat retains more or less of the rufous summer-tinge. The dark line down the middle of the back is very strongly marked, there is a more distinct black bar above the white tail-patch, and the limbs are shorter and the body proportionately longer. The height at the shoulder is about 2 feet 11 inches. This species is confined to the mountains of the island of Formosa.

Length on outside curve.	Circum- ference.	m- Tip to Widest ce. Tip. inside.		Points.	Locality,			Owner.	
193	$3\frac{3}{5}$	13	$16\frac{3}{8}$	4+4	Formosa				British Museum.
19	31			4+4	Do.				Duke of Bedford.



Head of Dybowski's Sika.

DYBOWSKI'S SIKA (Cervus [Pseudaxis] hortulorum).

In addition to its larger size (between 3 feet 7 inches and 4 feet at the shoulder, this species is distinguished from the Manchurian sika by the hairs covering the gland on the hind cannon-bone being of the same colour as the rest of the coat in summer and only slightly grizzled in winter, and by the tip of the tail being apparently white. The head and neck are bluish grey, and in immature animals whitish spots persist in winter, although these disappear completely at this season in fully adult bucks, in which the coat becomes very long and shaggy, especially on the throat and neck. Hinds are more brightly coloured in winter than the stags, and retain distinct spotting. This deer was named (hortulorum by Consul Swinhoe from an immature buck and doe taken at the sack of the Summer Palace, Pekin, and was afterwards obtained in the wild state in the Ussuri district of North-eastern Manchuria, when it received the name of C. dybowskii. In the typical Manchurian race (C. hortulorum typicus) there is no dark line down the back: but this is present in the smaller southern race (C. hortulorum kopschi of the Yang-tsi valley.

	Circum- ference.	Tip to Tip.	Widest inside.	Points.	Locality.	Owner.
$34\frac{1}{4}$	5≩	$34\frac{1}{2}$	$25\frac{1}{2}$	5 + 5	5	British Museum (Duke of Bedford).
32 ³ / ₄	$5\frac{1}{2}$	23 7/8	$22\frac{3}{4}$	4+4	N.E. Manchuria	A. J. A. Douglas.
31½	5‡	$27\frac{1}{8}$	263	4+4	Do	Sir Edmund G. Loder, Bart.
27	$4\frac{1}{8}$	$23\frac{1}{2}$	20	4+4	Manchuria .	Hon. Walter Rothschild.
26	3 ³	18	152	4+4	Do	E. P. Tennant.
32 1	$4\frac{1}{2}$	16½	$23\frac{1}{2}$	4+4	(Shed antlers) .	Duke of Bedford.
32	$4\frac{1}{4}$	27	$24\frac{3}{8}$	4+4	Do	Do.
3112	$4\frac{1}{2}$	181		4+4	N.E. Manchuria	Hon. Walter Rothschild.
2 9 ⁵ / ₈	4 8	$27\frac{3}{4}$	21	5+5	Do	W. Banks.
$27\frac{1}{2}$	48	161	191	4+4	Do	A. Hardcastle.
26	$4\frac{1}{2}$			5+4	(Shed antlers).	W. Winans.



Dybowski's Stag in summer coat, with the antlers in velvet.

Photographed by the Duchess of Bedford.



Head of Barasingha.

The BARASINGHA or SWAMP-DEER (Cervus [Rucervus] duvauceli).

This species belongs to the rucervine group, in which the antlers lack a bez-tine, and apparently also a trez; the beam being regularly forked, and each branch again dividing, so that there are at least four tines. The gland on the hind-leg is absent or represented by a tuft.

In the swamp-deer the antlers are smooth and flattened, with a long brow-tine rising almost at right angles to the beam, which is undivided for about half the total length of the antler, and then splits into a fork, each branch being usually simply forked, but sometimes divided in a



Head of Barasingha, from the Central Provinces, with antlers approximating to the Thamin type.

From the Proceedings of the Zoological Society for 1899.

more complicated manner. General colour bright rufous brown, often speckled near the back. Height at shoulder, from 3 feet 8 inches to 3 feet 10 inches; weight, about 400 lbs.

Distribution.—India, exclusive of Ceylon.

Length on outside curve.	Circum- ference.	Tip to Tip.	Widest inside.	Points.	Locality.	Owner.
41	61	$35\frac{1}{2}$	38 ·	8+5	Central Provinces .	Capt. W. W. Hancock.
41	51	32	37‡	8+7	Do	Col. C. B. Wood.
41	5 ½	(one a	intler ken)	6+6	Do	Major C. S. Cumberland.
391	5	35 \\ 2	37 ½	5+6	Do	Do.
381	5 ½	(shed a	antlers)	6+5	Do	C. F. Egerton.
38	44	2S§	$33\frac{1}{2}$	6+6	Do	J. A. McKee.
3S	5 2	35‡	$36\frac{1}{2}$	7 + 7	Do	R. J. Purcell.
-38		43		6+6	Do	J. D. Inverarity.
$-37\frac{1}{2}$	43	28	31	5+5	Do	Bombay Natural History Society.
378	5‡	235	28½	7+6	?	Sir Edmund G. Loder, Bart.
363	6	$27\frac{1}{2}$		8+6	5	Major Lord Charles M. Nairne.
361	$4\frac{1}{2}$	32	$20\frac{1}{4}$	5+5	?	Mrs. Macan.
361	$5\frac{1}{2}$	311	34	8 + 7	Kheri	Capt. H. Pelham Burn.
361	51	291	26½	7 + 5	?	Capt. H. F. Salt.
-361	5	21	25	6 + 5	Nepal	R.E. Mess, Roorkee.
36	5	26‡	281	6+5	3	Major T. M. Ward.
36	5	294	33 ³ / ₈	6+5	Nepal	British Museum (B. H.
36	$4\frac{1}{2}$	47	47	6+6	Central Provinces .	Hodgson). Col. C. B. Wood.
-36		29		6+6	Nepal	J. D. Inverarity.
-36	51	$32\frac{1}{2}$		7+7	3	Major W. Anstruther Gray.
$35\frac{1}{2}$	5	30 ¹ / ₈	324	5+5	?	LieutCol. R. Gordon.
358	4 = 3	27	2 9 ³ ₄		?	Sir Victor Brooke's Collection.
35 1	$4\frac{1}{2}$	291	32%	6+5	?	Capt. H. J. D. Broughton.
351	54	221		7 ÷ 6	Nepal	H. C. V. Hunter.
35	41	27 1/2	301	5+5	Tarai	LieutCol. E. B. Cook.
35	$5\frac{1}{2}$	31 1/2	34‡	8 + 6	Central Provinces .	Major R. Baker-Carr.
35	5	291	321	6+6	Do.	British Museum.
341	43	32		6 - 5	?	Sir Guy Fleetwood Wilson.
34	4 2	22½	257	8+7	?	Capt. S. F. A. Hurt.
33½	5	251	30}	8+6	?	Duke of Penerenda.
33	5	30	307	4+4	?	G. P. Cosens.

- Over measurements.



Skull and Antlers of Schomburgk's Deer. From a specimen in the British Museum, presented by the late Mr. Rowland Ward.

SCHOMBURGK'S DEER (Cervus [Rucervus] schomburgki).

La-ong or La-on, Siamese.

Allied to the preceding, but the antlers smooth, rounded, and more complex; the brow-tine very long, frequently forked, and arising nearly at right angles to the beam, which is very short, compressed, and regularly forked, with each of the main branches about equally developed and again forking in a similar manner to terminate in long cylindrical tines. General colour uniform dark brown. Height at shoulder, about 3 feet 5 inches.

Distribution.—Siamese territory east and west of the Menam River; also Cambodia west of the Menam River south of Paknampho, and in swamps occasionally on the east; in fact, chiefly the inland districts east of the Menam River in Northern Siam.

Length on outside curve.	Circum- ference.	Tip to Tip.	Widest inside.	Points.	Loca	ulity.		Owner.
33	51	171	315	11+9	Siam .			British Museum (Rowland Ward).
-32 1	51	271	29	$12 \div 11$	Do			Sir Edmund G. Loder, Bart.
-312	₽ ⁵	24	271	13+10	Do			Bombay Natural History Society.
-307				10 + 12	Do			American National Collection.
30}	5	158	33	10+10	Do			British Museum.
294	43	28 3	315	10+11	Do			Do.
201	6	$19\frac{1}{2}$	27	6 ± 7	Do			J. Carr Saunders.
281	54	ΙΙ	298	11+9	Do			Sir Victor Brooke's Collection.
-28.5	5.52	9.2	28.2	10+9	Do			Indian Museum.
28	$4\frac{1}{2}$	193	29 ⁵ / ₈	10+6	Do			Sir Edmund G. Loder, Bart.
271	5 ³ / ₄	20	$27\frac{3}{4}$	10+9	Do			J. W. Ford.
26 <u>3</u>	6‡	18	302	10+8	Do		٠	J. C. Phillips.
$26\frac{1}{2}$	51	23	$32\frac{1}{2}$	11+9	Do			G. L. Harrison.
201	4	171	20	6+6	Do			Hon. Walter Rothschild.

- Owner's measurements.

The THAMIN or ELD'S DEER (Cervus [Rucervus] eldi).

Although belonging to the same group as the two preceding species, this deer is readily distinguished by the peculiar form of the antlers. These are rounded and rough, with a long curved brow-tine, forming a continuation of the curve of the beam, which is set at right angles to the pedicle; the beam unbranched for some distance, much curved, and finally forked, with the outer prong more subdivided than the inner. Height at shoulder, about 4 feet 3 inches; weight, from 210 lbs. to 245 lbs. There are three races of this species. First, the Burmese thamin (C. eldi typicus), ranging from near Manipur through Burma to the Malay Peninsula, in which the antlers are rounded throughout, and the coat is uniformly umber-brown. Secondly, the Manipur thamin (C. eldi cornipes), in which the under surface of the fetlock is horny instead of hairy. Thirdly, the Siamese thamin (C. eldi platyceros,, from Siam and Hainan, in which the tips of the antlers are flattened with a number of small snags, and the coat is redder, with yellowish spots. Swamp-deer from the Central Provinces show a remarkable approximation in the form of their antlers to the present species, as shown in the figure on page 55.

Length on outside curve, not including brow-tine.	Circum- ference.	Tip to Tip.	Widest inside.	Points.	Locality.	Owner.
42	5	24	29	3+2	Burma	A. H. Collins.
41	$5\frac{1}{2}$	$27\frac{5}{8}$	36	5 + 5	Upper Burma .	MajGen. O. E. P. Lloyd.
-41	51	30	36	5+7	Do	Col. G. H. Evans.
$40\frac{1}{2}$	5	$25\frac{1}{2}$	$34\frac{1}{2}$	7+6	Do	A. B. Roberts.
40‡	5	301	36₹	6+5	3	C. B. Smales.
40	5‡	$2I\frac{3}{4}$	28	5+5	Upper Burma.	MajGen. H. D'U. Keary.
40	$5\frac{1}{2}$	21	321	6+5	Do	Col. H. Appleton.
-39\\\\\	5	$25\frac{1}{2}$	$35\frac{1}{2}$	7+6	Do	S. E. F. Jenkins.
39\$	5	$20\frac{1}{4}$	$30\frac{1}{2}$	6+6	Burma	Col. J. W. A. Morgan.
¹ 39§	5	318	36§	20 small points)	Siam	Sir Edmund G. Loder, Bart.
$-39\frac{1}{2}$	5	$29\frac{3}{4}$	37	12	Burma	Major E. W. M. Purvis.
$-39\frac{1}{2}$		$2I\frac{1}{2}$	33		Do. ,	LieutCol. H. de H. Haig.
-39	$7\frac{1}{2}$	$22\frac{1}{2}$	29	10 + 10	Manipur	LieutCol. H. S. Wood.
-39	5	4 I		5+5	Lower Burma .	W. O. Hannyngton.
$38\frac{7}{8}$	$6\frac{1}{4}$	$25\frac{1}{2}$	308	16+19	?	British Museum.
38‡	6‡	24	30^{3}_{4}	6 + 5	Manipur .	British Museum (Hume
384	5	$2I\frac{1}{2}$	29‡	7+7	Burma	Collection). P. Grace.
38	4 5	291	36 3	5+5	Pegu	G. R. Radmore.
38	$4\frac{1}{2}$	$20\frac{1}{2}$	32	5+4	Burma	H. F. Hall.
37	5	$23\frac{3}{4}$	$31\frac{1}{2}$	4+4	Do	Major C. S. Cumberland.
37	6		$37\frac{1}{4}$		Do	Capt. J. A. F. Field.
363	$4\frac{3}{4}$	16	27	4+4	Do	Major L. E. Hopkins.
$36\frac{3}{4}$	$4\frac{3}{4}$	22	27	7 + 5	Do	Capt. M. E. Lloyd.
36½	$4\frac{1}{2}$	$22\frac{5}{8}$	$29\frac{1}{2}$	5+4	Do	H. Twyford.
$36\frac{1}{2}$	$4\frac{1}{2}$	$24\frac{1}{2}$	$28\frac{3}{4}$	5+4	Do	W. S. Powell.
36	$4\frac{1}{2}$	23	31	10+9	Do	Capt. H. W. Marsden.
36	4 ³ / ₄	291	311	4+3	Manipur	Capt. L. P. Haviland.
36	5			4+4	?	Duke of Bedford.
36	$4\frac{1}{2}$	25	33 1	7 ± 5	?	L. G. Nunes.
36	5	313	37	6+4	Burma	Sir Robert Harvey, Bart.
$35\frac{1}{2}$	$4\frac{1}{2}$	$22\frac{1}{4}$	314	6+6	Kyaikto, Lower Burma	J. W. Clough.

⁻ Owner's measurements. 1 Measured on front of antler from highest tip to tip of frontal tine 56½ inches.

Length on outside curve, not including brow-tine.	terence.	Tip to Tip.	Widest inside.	Points.	Locality.	Owner.
$-35\frac{1}{2}$	5	201	32	4+4	Manipur	R.E. Mess, Roorkee.
-35	6	22	27	5+5	Burma	Bombay Natural History Society.
35	41	23	30	5+4	Upper Burma .	W. A. Conduitt.
342	5	161	24	6+6	Burma	P. B. Vander Byl.
344	4%	311	34 4	10+7	Do	W. O. Hannyngton.
344	5	24	321	6+6	Do	Hon. Walter Rothschild.

⁻ Owner's measurements.



Skull and Antlers of Thamin. From a Burmese specimen.

OWNER'S MEASUREMENTS.

Extreme length	Cir ta-			Number of Points	Loc	ality.	Owner.
56}	.5 -	25	37	13	Burma	,	W. F. Loftus-Tottenham.
551	4 9	345	421	1.2	Do.		Do.
55	7	25,	38,	12	Do.		Col. G. H. Evans.
55	57	30	37	15	Do.		Do.
55	5		.1.2	13	Do.		Do.

SAMBAR 61



Head of Sambar.

The SAMBAR DEER (Cervus [Rusa] unicolor).

The typical representative of the rusine group of deer, in which the antlers are rounded and three-tined, the bez and apparently the trez being wanting, and the summit of the beam forked. The relatively long tail is bushy, the tear-gland and the pit in the skull for its reception are large, and the upper ends of the nasal bones of the skull expanded. In the typical sambar the height reaches to 5 feet at the shoulder. Antlers large and rough, with the brow-tine given off at an acute angle to the beam, and the two terminal tines of nearly equal length. Hair coarse and shaggy, uniformly dark umber-brown, with some chestnut on the buttocks, in the adult. Face-glands very large, and capable of being turned inside out. Ears large, and the tail relatively long and bushy. Young uniformly coloured or spotted.

Distribution.—The wooded districts of India, Ceylon, the Malay countries, the Philippines, Formosa, Bonin Island, and parts of China.

A.—INDIAN SAMBAR (C. unicolor typicus).

Size very large, young uniformly coloured; weight, about 600 lbs., when cleaned 415 lbs.

A pair of antlers, from the Central Provinces, measured 48 inches along the curve inside (= nearly 50 inches on outside curve); they were sent to Mr. A. O. Hume by Mr. R. Blewitt.

Distribution.—The wooded districts of India and Ceylon.

oi. outside	Circum- ference above brow-tine.	Tip to	Widest inside.	Points.	Locality.	Owner.
501	71/2	24	$3S\frac{1}{2}$	3-3	Bhopal	Col. H. H. Shahzada Obeidulla Khan.
48	7	Single		3	Khandesh	R. H. Madan.
-47.3		speci 	28½		Cent. Provinces	A. P. Perceval.
-463		49		3+3	Do	R. Wordsworth.
461	61	36%	111	3+3	Do	Duncan J. A. Campbell.
461	61/2	18	29	3+3	United Provinces .	A. V. Willcox.
461	63	241	30€	3+3	Cent. Provinces	British Museum (Hume
$-46\frac{1}{2}$		45			Garhwal	Collection). R. M. Nash.
46	9				?	C. J. Lucas.
451	7	17.1	281/2	3 + 3	?	E. R. Loder.
-451	71	38	$42\frac{1}{2}$	3+3	Saugor, C.P	LieutCol. R. W. Mapleton.
451	61	173	321	3+3	?	British Museum (Dr. H. Falconer).
45	78	221/2	337	3+3	Mayoghur, Cent. Pro-	Sir John Morris.
45	7 🖁	8		3+3	vinces ?	D. R. Wright.
: 45					Cent. Provinces	Bombay Natural History
45	9				Orissa	Society. H.H. the Maharaja of Tra-
45	8				Cent. Provinces (?) .	vancore. Heighway Jones.
44 }	6	26	322	3 · 3	?	LieutCol. F. Jollie.
:: }	5 }	33%	351	3 · 3	?	L. W. Reynolds.
441	7 5	443	451	3+3	Hangeer	Col. W. J. Morris.

Oares men arment

[•] The subserve the exist such a particular such a such a fire and we recorded in the *London the Bombay***The subserve that the Central Provinces, but got constituted to give a threather.



Frontlet and Horns of Sambar, shot by the Hon. J. Best. Spread, $49\frac{1}{4}$ inches.

Length on outside curve.	Circum- ference above brow-tine.	Tip to Tip.	Widest inside.	Points.	Locality.	Owner.
44	6	91	$24\frac{3}{8}$	3 + 3	Rewa	Major C. F. Pinney.
44	$6\frac{7}{8}$	19‡	313	3+3	Do. ,	H. E. M. Davies.
43 5	5 5	Single	horn	3+3	Do	British Museum (Hume Collection).
$43\frac{1}{2}$	51	17	28	3+3	Do	Sir P. E. Bates.
43 ¹ / ₂	6	32	$43\frac{1}{4}$	3+3	Cent. Provinces	J. H. Beckett.
43 ³ / ₈	61	20 ³ / ₈	29 ¹ / ₈	3+3	Do	Sir Robert Harvey, Bart.
$43\frac{1}{2}$	6	$26\frac{1}{2}$	34\frac{3}{4}	3+3	Do.	. C. A. Mortimore.
43	6	38	$43\frac{1}{2}$	3+3	?	J. H. Beckett.
43	6	$24\frac{1}{2}$	30	3+3	Khandesh	. A. Cumine.
43	$6\frac{1}{2}$	33	35	4+3	Cent. Provinces .	H. W. Seton Karr.
43	$6\frac{3}{4}$	$26\frac{3}{4}$	34	3+3	?	Capt. C. P. Graham.
42 3	5 ³	26	321	3+3.	Cent. Provinces .	A. H. Pollen.
42	6‡	23\frac{3}{4}	$35\frac{1}{2}$	3+3	?	Capt. A. H. Bailey.
413	53	191	23	3+3	?	Capt, W. F. Reichwald.

. atside	Circum- terence above brow-tine.	Tip to Tip.	Widest inside.	Points.	Locality.		Owner.
41%	7	$28\frac{1}{4}$	341	3 - 3	?		Hon. Walter Rothschild.
415	7 12	275		3-3	Cent. Provinces		Capt. Lord Charles Bentinck.
417	61	301	305	44	Do.		P. Jay.
411	54	22	241	3 - 3	Do.		Capt. W. O. Gibbs.
412	6	121	$23\frac{3}{4}$	3+3	Do.		LieutCol. T. M. Ward.
364	6₹	35½	32 Spread	8+6	Do.		Hon. J. Best. (See illustration.)

Ceylon Specimens.

Length outside curve.	Circum- ference above brow-tine.	Tip to Tip.	Widest inside.	Points.	Owner.
321	$6\frac{1}{4}$	24	261	3+3	A. R. Hay.
312	5	20	17	4+3	LieutCol. G. E. Hale.
-30	8?	$2I\frac{1}{2}$	19§	3 - 3	J. Ryan.
29	4 ½	25	$22\frac{1}{4}$	3+3	Earl Cairns.
27.1	44	163	20	3+3	A. M. Naylor.

⁻ Owner's measurements.

SAMBAR 65



Frontlet and Antlers of Malay Sambar.

Drawn from a Burmese specimen in the British Museum.

B.—MALAY SAMBAR (C. unicolor equinus).

This local race is nearly as large as the Indian sambar, but the antlers are generally shorter and thicker, with the hind or inner tine of the terminal fork much shorter than the front one, and arising as a spur from the inner hind margin of the beam, of which the front tine forms the direct continuation; the brow-tine is also generally longer. General colour of coat of adult darker, usually a light ring round the eyes, the ears smaller, often with a white margin, and the tail very bushy. Young spotted. The distributional area extends from Assam and Cachar through Burma and the Malay Peninsula to Siam, Hainan, Borneo, and perhaps Sumatra.

Length on out- side curve.	Circum- ference.		Widest inside.	Points.	Locality.	Owner.
33	51	284	30	3+3	Burma	. D. H. M. Boyle.
321	54	26	27.1	3+3	Cochin China .	. II.R.II. the Duc de Mont- pensier.
32	5	321	33½	33	Do	Do.
31	68	141	18.1	3 ÷ 3	?	G. Monteath.
31	51	26]	26½	3 + 3	Burma .	. E. M. Alexander.
301	61/2	174	19§	7 + 7	Borneo	. Sir Edmund G. Loder, Bart.
30\$	48	20%	211	3+3	Do	. British Museum.
200	$5\frac{1}{2}$	154	14	3+3	Do	. P. Grace.
25 }	$5\frac{1}{2}$	18	20	3+3	Do	. J. H. Dauber.

OWNER'S MEASUREMENTS.

42	8	28			Upper Burma.	H. Shaw Dunn.
344	84	20%	254	3+3	Do.	A. L. Bacon.
321	7.2	24‡	271	3+2	Burma	Major-Gen. O. E. P. Lloyd.
32	7 }	203	234	***	Upper Burma.	H. L. P. Walsh.
311	6	244	26	3+3	Do	B. Lentaine.
301	51	27%	1 30	3+3	Burma	Col. G. H. Evans.

¹ Outside.

C.—FORMOSAN SAMBAR (C. unicolor swinhoei).

This race is very closely related to the preceding, from which it is distinguished by its shorter head, concave profile, longer limbs, and certain differences in colour; the lower part of the legs being brownish or whitish yellow, and the bushy tail black all round. It is confined to the island of Formosa.

The grade of the second of the	Circum-	Tip to Tip.	Points.	Owner.
194		9	3+3	British Museum.
17	4 1/3		5	Duke of Bedford.
17	4	$1 \odot_1^2$	3 + 3	Sir Edmund G. Loder, Bart.
11,.	32	14)	3 - 3	British Museum.

Ogners measurements,

D.—LUZON SAMBAR (C. unicolor philippinus).

Nearly allied to the two last, the height at the shoulder being probably from 33 to 35 inches, the build stout and massive, with the hind-quarters specially elevated, and the form that of a small Malay sambar. On the head is a blackish streak starting from over each eye to form a line down the middle of the face separated by a band of pale fawn from a moustache-like dark mark on the muzzle.

Distribution.—The island of Luzon, in the Philippines; introduced into the Marianne Islands, specimens from which have been described as a separate species under the name of *C. mariannus*.

Length on outside curve.	Circum- ference.	Tip to Tip.	Points.	Local	lity.	Owner.		
21	$4\frac{3}{4}$	$5\frac{1}{2}$	3 + 3	Luzon.		Sir Edmund G. Loder, Bart.		
195	$5\frac{1}{4}$	7 1/2	4+4	Do		British Museum.		
183	5 ¹ 8	$14\frac{3}{4}$	4+3	Do		Do.		

E.—BASILAN SAMBAR (C. unicolor nigricans).

Smaller than the last, the height at the shoulder in a mounted specimen in the British Museum being 27 inches. Detached antlers indicate, however, larger animals.

Length on outside curve.	Circum- ference.	Tip to Tip.	Points.	Locality.	Owner.				
$13\frac{1}{2}$	4 3	$12\frac{1}{8}$	3+3	Basilan Island		British Museum (A. H. Everett).			
131	$4\frac{1}{2}$	115	3+3	Do.		Do.			

F.—SZE-CHUAN SAMBAR (C. unicolor dejeani).

A large race from North-western China, with very massive antlers, which show a tendency to develop small supplemental snags.

Length on outside curve.	Circum- ference.	Tip to Tip.	Widest inside.	Points.	Locality.			Owner.
31	6	22	$24\frac{1}{2}$	3+3	N.W. China			Hon. Walter Rothschild.
-308	$5\frac{1}{2}$	15%	$\mathfrak{r} 8 \frac{1}{2}$	3 + 3	Sze-chuan			Paris Museum (type).
					- Owner's measur	emen	ts.	



Antlers of Javan Rusa. From a specimen in the collection of Sir Edmund G. Loder, Bart.

The RUSA DEER (Cervus [Rusa] hippelaphus).

General form, coat, and colour sambar-like; but the ears smaller, the tail thin, the hairs on the back banded with coloured rings, and the under-parts, chin, and inner sides of buttocks whitish. Antlers comparatively slender and only moderately rough, with the brow-tine medium or short, and making a large acute angle with the beam; the hind or inner tine of the terminal fork much longer than the front or outer one, and forming the continuation of the beam, from the front or front outer surface of which the brow-tine arises as an off-shoot; the two antlers enclosing a lyrate space. Young, uniformly coloured. There are two races of this species—one the Javan rusa 'C. hippelaphus typicus of the approximate size of a red deer, and the other the Moluccan rusa 'C. hippelaphus moluccensis), from Celebes and

the Moluccas, said to be smaller, and without a distinct mane on the neck or tuft to the tail.

A.—JAVAN RUSA (C. hippelaphus typicus).

	Circum- ference.			Points.	Locality.			Owner.	
$37\frac{1}{2}$	5 3	16	173	3+3	Java				His Majesty the King.
$37\frac{1}{2}$	5	163	198	3+3	Do.				British Museum.
-36		$\operatorname{I}\operatorname{I}\tfrac{1}{2}$		3+3	Maur	itius (int	rodu	ced)	Admiral Sir William Kennedy.
35½	4 ³ / ₈	$22\frac{3}{4}$		3+3	Java				Sir Victor Brooke's Collection.
35 1	$4\frac{1}{2}$	172	17	3+3	Do.				Hon. Walter Rothschild.
342	$4\frac{7}{8}$	171	221	3+3	Do.				Vice-Admiral Sir Colin R. Keppel, R. N.
34	5	14	161	3+3	Do.				J. C. Phillips.
¹ 34					Rodri	iguez (in	trod	uced)	Admiral Sir William Kennedy.
$33\frac{1}{2}$	5	12		3+3	Java				Sir Edmund G. Loder, Bart. (See
33	$4\frac{1}{2}$	$25\frac{1}{2}$		3+3	Do.				illustration, p. 68.) Duke of Bedford.
		_	Owner's r	neasurem	ents.				1 Weight, 269 lbs.

B.—MOLUCCAN RUSA (C. hippelaphus moluccensis).

Length on outside curve.	Circum- ference.	Tip to Tip.	Points.	Locality.	Owner.
36½	45	18 <u>1</u>	3+3	?	Sir Edmund G. Loder, Bart.
$27\frac{1}{2}$	44	$14\frac{1}{2}$	3 + 3	3	Duke of Bedford.
83	4	5½		Batchian	British Museum (A. R. Wallace).



Frontlet and Horns of Chital. Shot by the Hon. J. Best.

The CHITAL or AXIS DEER (Cervus [Axis] axis).

This beautiful species is distinguished from all the other members of the rusa-like deer, except the Philippine spotted deer (*C. alfredi*), by the body being profusely spotted with white at all seasons and all ages; the general colour of the upper-parts being light rufous fawn, with a dark stripe from the nape to the tip of the tail and a black band on the muzzle. Height at shoulder, from 36 to 38 inches; live-weight estimated at about 200 lbs. Antlers supported on short pedicles, long, slender, and moderately rough; the brow-tine making nearly a right angle with the beam, and the front tine of the terminal fork, which forms the continuation of the beam, much the longer.

The Ceylon chital (C. axis zeylanicus) has relatively small and light autlers, and also differs somewhat in coloration from the large typical race of Central India. There is also a small continental form (C. axis minor).

Distribution. India and Ceylon.

Lather	City en the fire	Lip (- Lips	Ρ,	1	Lo alica	Owner.
;9	1 =	213	ţ	;	United Provinces	Lady Eileen Elliot.
20	41	1 5 }	1	5	Jata of pore	Capt. F. Pope.

Length on outside curve.	Circumfer- ence above the first point.	Tip to Tip.	Points.	Locality.		Owner.
$38\frac{1}{2}$	4	25	5 + 5	Mandla		Hon. Walter Rothschild.
-384	43	19½	3+3	Asirgarh Jungle,		LieutCol. M. Cust.
38	43	18	3+3	Central Province East Berar .	ss.	BrigGen. F. H. Whitby.
38	44	20	4+4	Do.		Major-Gen. H. D'U. Keary.
38	$4\frac{1}{2}$	22	4+4	?		Col. A. Pollock.
$37\frac{1}{2}$	3₹	19	3+3	Siwalik Hills .		Major B. R. M. Glossop.
$37\frac{1}{2}$	4 ¹ / ₄	24 ³ / ₈	4+4	Bassim, C.P		British Museum (Hume Col-
371	41/4	21	4+3	;		lection). Major A. D. Greenhill-Gardyne.
37 ¹ / ₄	41	16 7	4+5	?		Sir Victor Brooke's Collection.
37 ¹ / ₄	44	17	4+4	United Provinces		A. Courthorpe.
$-37\frac{1}{4}$	$4\frac{1}{2}$	$12\frac{3}{4}$	4+4	?		J. C. Phillips.
$37\frac{1}{4}$	4	$2I\frac{1}{2}$	3+3	Central Provinces		A. P. Jack.
$36\frac{3}{4}$	4	$20\frac{3}{4}$	4 + 4	Do.		J. A. McKee.
$36\frac{1}{2}$	$4\frac{1}{2}$	20	5+5	Do.		Hon. J. Best. (See illustration,
$36\frac{1}{2}$	$4\frac{1}{2}$	25	4+3	Berar		p. 70.) C. H. Seely.
35 ³ / ₄	4	193	3+3	Central Provinces		Major G. T. M. Bridges.
$35\frac{1}{2}$	4 ¹ / ₄	181	4+4	?		Sir Edmund G. Loder, Bart.
$35\frac{1}{2}$	4	${\rm I}2\tfrac{1}{4}$	5+5	?		G. W. Hatch.
$35\frac{1}{2}$	4	$32\frac{1}{2}$	3 + 3	;		Capt. R. Tudor Owen.
$35\frac{1}{2}$	33	19	3 + 3	5		Col. H. Denys.
-35	3\frac{3}{4}	$17\frac{1}{4}$	3+3	Ceylon		R. Wilson.
$-34\frac{1}{2}$	4 5	19‡	3 + 3	Do	٠	F. J. S. Turner.
$-34\frac{1}{4}$		•••	3 + 3	Do		G. A. Burney.
$-33\frac{3}{8}$	$4\tilde{1}^5$	14 1 8	3 ÷ 3	Do		J. P. Ireson.
-33½	$3^{\frac{1}{1}\frac{5}{6}}$		3 + 3	Do		A. J. Wickwar.
$-32\frac{3}{4}$	$4\frac{1}{2}$	24	3 + 3	Do		E. M. Biggs.
-32	$4\frac{1}{8}$	148	$3 \div 3$	Do		J. G. Napier.
32	$3\frac{1}{4}$	19½	3+3	Do		W. J. Smith.
313	4	13	3+3	Do		M. J. Alderson.
$-31\frac{1}{2}$	$3\frac{3}{4}$	17½	3+3	Do		Count Scheibler.
31½	3	10½	3+3	Do		A. R. Hay.
-314	35	17	3+3	Do		G. B. Vernon.
-314	3	9	3+3	Do		H. Storey.
30½	3½	101	3+3	Do		Major F. H. N. Pym.

⁻ Owner's measurements.



Head of Hog-Deer.

The HOG-DEER or PARA (Cervus [Hyelaphus] porcinus).

In the group typified by the hog-deer the antler-pedicles are long, the bulla of the skull is large, and the pit for the face-gland much less deep than in the sambar group, while the nasal bones are not expanded superiorly, and the tail is shorter. In the Philippines the group (Hyelaphus) is represented by the Philippine hog-deer C. calamienensis, and by the species named C. culionensis. The Indian hog-deer is not dissimilar to the Bavian deer, but the antlers are larger, the build longer and lower, and the summer coat of the adult, as well as that of the young, spotted with yellowish white. General colour in winter rufous or yellowish brown, somewhat speckled above, and much darker beneath; in summer, upper-parts paler and more or less spotted. Antlers on long pedicles, with the hind tine of the terminal fork the shorter. Height at shoulder, from about 25 to 29 inches; weight, about 90 to 100 lbs. A pair of antlers belonging to a specimen shot by Mr. A. O. Hume in the Ganges Khadir, near Meerut, measured 20 inches along the beam inside, and had a mid-beam girth of 3.5 inches.

Distribution.—India, throughout the Indo-Gangetic plain from Sind and the Punjab to Assam, thence through Sylhet to Burma, Tenasserim, and Siam. The Siamese race (C. p. hecki, differs from the typical hog-deer by its superior size and the absence of spots.

Length on outside curve.	Circum- ference above brow-tine.	Tip to Tip.	Locality.	Owner.
-231	3 ⁷ / ₈	$12\frac{7}{8}$	Burma	Col. G. H. Evans.
$-22\frac{1}{2}$	3 1	20	Do	J. C. Phillips.
2 I 5	$3\frac{1}{4}$	6§	Do	British Museum.
-2I 1 4	$3\frac{3}{4}$	$22\tfrac{1}{2}$?	Sir Edmund G. Loder, Bart.
-2 I	31	15‡	Pegu	Major-Gen. E. M. Norie.
20 3	$3\frac{1}{2}$	$22\frac{1}{2}$;	Major W. Anstruther Gray.
-20 ³ / ₈	3½		Nepal	Bombay Natural History Society.
-20 ¹ / ₁	$4\frac{1}{2}$	171	?	J. Whitaker.
$-20\frac{1}{8}$	3	$9\frac{1}{2}$	United Provinces.	J. Nugent.
20	•••		Burma	Indian Museum (Capt. R. C. Beavan).
-195	3 ¹ / ₈	16	Meerut	Major W. Q. Winwood.
192	318	13 ⁵	Dudla Swamp, United Provinces	Major W. E. Stobart.
19½	31/4	16	?	Col. A. Short.
19\$	31/4	$16\frac{1}{2}$	Burma	Sir Victor Brooke's Collection.
191	38	183	5	H. C. V. Hunter.
19	$3\frac{1}{2}$	18	Upper Burma .	Sir Edmund G. Loder, Bart.
1-18	$6\frac{1}{2}$	19	Ganges Khadir .	LieutGen. Sir R. Pole-Carew.
18	2 3/4	$12\frac{3}{4}$	Burma	D. H. M. Boyle.

⁻ Owner's measurements.

The BAVIAN DEER (Cervus [Hyelaphus] kuhli).

A small deer allied to the hog-deer, standing about 27 inches at the shoulder, of light build, and of a uniform brown colour, without a dark stripe down the back.

Distribution.—The Bavian Islands, between Borneo and Java.

Length on outside curve.	Circum- ference.	Tip to Tip.	Widest inside.	Points.	Owner.
03	27	107	107	3 + 3	British Museum.

¹ Ten points.



Head of Fallow Deer.

The FALLOW DEER (Dama vulgaris, or Dama dama).

Antlers normally without a bez, but with a trez-tine, above which the beam is palmated, with numerous snags on the hind edge. Coat spotted with white in summer (except in the black breed), with a black-bordered white area in the neighbourhood of the long tail. Height at shoulder, about 3 feet; weight, about 140 lbs. clean. The original distribution includes Greece, Spain, Portugal, Anatolia, Rhodes, Sardinia, Asia Minor, Northern Palestine, and North-western Africa, but the species has been introduced into Great Britain and some other countries. In Spain wild fallow abound in Estremadura, especially in the province of Cáceres; in Asia Minor they are found along the south coast as far as Adana, and at one spot in the interior; whether they still exist in North Africa is doubtful.

Length on out- side curve.	Circum- ference.	Tip to Tip.	Spread inside.	Points.	Width of Palm.	Locality.	Owner.
32	$4\frac{1}{8}$	18	28	12+10	5.1	Woburn	Duke of Bedford.
$-31\frac{1}{2}$		31	28 <u>t</u>			?	Ernest Ritter von Wisely.
131	5			30	7	?	Sir Victor Brooke's Collec-
-301	5	$10\frac{1}{2}$	201	13+11	5	?	J. C. Phillips.
230	4 ³ / ₄	$23\frac{1}{2}$	26½	10+9	$4\frac{1}{2}$	Drummond Castle	J. G. Millais.
30	35		$22\frac{1}{8}$	12+12		Uppark, Sussex .	J. E. Harting.
30	4	19‡	24	11+11	6		Douglas M'Douall.
-30	41/2	22	37 outside	16+10	7	Drummond Castle	J. G. Millais.
293	$4\frac{1}{2}$	$22\frac{3}{4}$	outside $25\frac{1}{2}$	9+8	5	?	Capt. H. T. Timson.
291	5		28½	13+14	7	Petworth, Sussex	J. G. Millais.
29 ¹ / ₂	4 ³ / ₈		24 ³	10+15		Drummond Castle	Earl of Ancaster.
29‡	4 ¹ / ₈			14+11	8	Woburn	Duke of Bedford.
29 ¹ / ₄	4 ¹ / ₈		193	16+15		New Forest .	Hon. G. Lascelles.
-28 3	63		29½	20	63	Bohemia	W. Winans.
-28½	4	151	23	9+8	5 3	Essex	W. H. Wilson.
28½	4 ¹ / ₈	18	$24\frac{3}{4}$	8+6	4	New Forest	E. Festus Kelly.
3-281	4	$14\frac{1}{2}$	26	10+11	6	Woburn	Duke of Bedford.
$-28\frac{1}{2}$	5		30	22		Otago, New Zealand	Rev. W. C. Oliver.
4281	4		in 34)	19	6	(Introduced) Colebrooke	Sir Victor Brooke's Collec-
281	$4\frac{3}{4}$	23	tside 	18+15	6‡	?	tion. Sir Philip Brocklehurst,
5-28	41/4	26	26	23		Surrenden Park .	Bart. W. Winans.
$27\frac{1}{2}$	44	I 5⅔	201	8+9	43	Windsor	Sir Charles Wakefield.
274	4	23		10+8		England	J. Carr Saunders.
26 7	$3\frac{3}{4}$	12	I 7 ½	10+7		?	British Museum.
$-26\frac{1}{2}$	$4\frac{1}{4}$	$23\frac{1}{2}$	$20\frac{1}{2}$	9+7	$5\frac{7}{8}$	Perthshire	A. Basil Brooke.
26	$3\frac{3}{4}$	8‡	$23\frac{1}{2}$	7 + 7	5	5	G. L. Harrison.
-26	5	$20\frac{3}{4}$	$23\frac{3}{4}$	10+10	$4\frac{1}{2}$	Tasmania. (Intro- duced)	T. W. H. Clarke.
$25\frac{3}{4}$	$3\frac{3}{4}$	$13\frac{1}{2}$	$23\frac{1}{2}$	13+12	5	?	T. G. A. Moncrieffe.
$^625\frac{1}{2}$	34	174	$24\frac{1}{4}$	10+10	6	Surrenden Park .	W. Winans.
25	34	•••	193	8+8		Epping Forest .	E. N. Buxton.
25	$3\frac{1}{2}$	$15\tfrac{1}{2}$		10+10	4	Northamptonshire	H.H. the Maharaja of Bikanir.
-24	$3\frac{1}{2}$	27	$21\frac{1}{2}$	23		Surrenden Park .	W. Winans.

- Owner's measurements.

1 Recorded by J. G. Millais (British Deer and their Horns).
2 Weight of antlers, 8 lbs. 1 oz. on skull; no lower jaw (Millais, British Deer).
3 Weight dressed, 165 lbs.
4 Seven years old: as he fell, 237½ lbs.; 198 lbs. cleaned.
5 Weight, 218 lbs.
6 Weight, 222 lbs.



Head of Mesopotamian Fallow Deer. From a specimen in the British Museum.

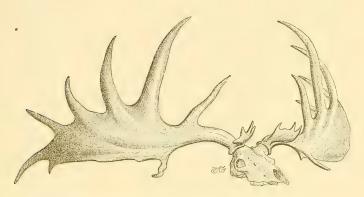
The MESOPOTAMIAN FALLOW DEER (Dama mesopotamica).

Larger and brighter coloured than the ordinary fallow deer, with the spots near the middle of the back tending to form longitudinal stripes, and the tail wholly white. Antlers of a totally different type, being somewhat expanded at the origin of the trez-tine (which is large, and situated some distance above the short brow-tine), but at the summit only moderately flattened, and breaking up on the hind border into several snags. Weight, about 24 stone, clean.

Distribution.—The mountains of Luristan in Mesopotamian Persia and part of Asia Minor.

Le gin nuste e stee.	the me term	Tip to Tipa	Spread in ide.	Points.	Width of Palm	Locality.	Owner.
3',12	41	16‡		12 - 15	52	Karabogha, Asia Minor	F. E. Whittall.
29	4 =	303	241	10 11	5 ½	Asia Miner	Do.
211	32	$1, \frac{1}{2}$		9 ÷ 7		Do	Paris Museum (Abbé David).
204	5	1.4		6 + 5		Luristan Mts.	Sir Edmund G. Loder, Bart.

Owner measurements.



Skull and Antlers of extinct Giant Irish Deer (Irish Elk).

The GIANT IRISH DEER (Dama (?) gigantea).

(Commonly called "Irish Elk.")

An extinct deer, probably standing at least 6 feet at the shoulder, with the antlers enormously expanded, and carrying several large tines on the front border, of which the one above the trez is the longest; the brow-tine being often flattened and forked. In its typical form this magnificent deer occurs in the Prehistoric deposits of Ireland, England, and probably some of the western districts of the Continent. In the skull the vomer is welded to the adjacent bones. The following specimens are Irish:—

Spread to T	Tip ip.	Length round inside of antler.	Length of both antlers across skull.	Circum- ference above burr.	Width of Palm.	Points.	Owner.
ft. IO	in. 2	ft. in. $5 8\frac{1}{2}$	ft. in.	$9\frac{7}{8}$	19‡	19	British Museum.
9	8				20	12+11	Hon. Walter Rothschild.
9	6			10	17	13+10	J. G. Millais.
9	5	6 2	12 5	11	2 I ½	11+11	Viscount Powerscourt.
9	5	6 o	12 10	13½	$21\frac{1}{8}$	15+13	Sir Edmund G. Loder, Bart.
9	3	6 2	13 5	10	24	12+10	Duke of Westminster.
9	2	•••	13 6		$15\frac{1}{2}$		Mrs. Graham Lloyd.
8	I 1	5 10	•••	I I 1	17	9+9	Viscount Powerscourt.
8	10	5 9	11 92	9‡	17	12+11	Duke of Westminster.
8	10	5 10	12 5	10	18	10+9	G. C. Whitaker.

OWNER'S MEASUREMENTS.

Sprette to U		Length round inside of antler.	Length of both antlers across skull.	Circum- ference above burr.	Width of Palm.	Points.	Owner.
ft. 1 I	in.	ft. in. 7 10	ft. in.	94	182		Public Library, Dublin.
11	6				20		Marquis of Londonderry.
ΙI	5	6 3		93	17	11 + 11	Dublin Museum.
11	3	7 5\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\		121	194	17	Mrs. Donaldson-Hudson.
11	$\Gamma_2^{(1)}$	$6 9\frac{1}{2}$		91	161	23	Sir Peter Walker, Bart.
10	$4\frac{1}{2}$	6 9	13 10	I 2	20		Earl of Bessborough.
9	3	•••	•••	103	12	7+7	Duke of St. Albans.
ò	2		11 10	101	221	9+9	Dublin Museum.

The MILU or PERE DAVID'S DEER (Elaphurus davidianus).

This deer differs from all the preceding groups by the peculiar form of the antlers, which rise in the plane of the forehead, and fork at a comparatively short distance above the burr, the front prong of the fork again dividing, while the hind prong is long and straight. The bushy tail is longer than in any other deer, and the neck of the male is maned. There is a gland on the outer side of the upper half of the hind cannon-bone, but none on the hock. The colour is uniformly tawny in the adult, but spotted in the young. Height at shoulder, about 3 feet 9 inches. In captivity the antlers are frequently shed twice a year. In the structure of the bones of the feet the milu resembles the red deer group, to which and the barasingha it is considered by Mr. R. I. Pocock to be allied. Mr. Pocock considers that the front prong of the main fork represents the brow-tine of the red deer groups.

Distribution.—Probably northern China or perhaps Kashgaria; recorded in a fossil state from Japan. Unknown in the wild state, and apparently now represented only by the herd at Woburn Abbey, Bedfordshire.

	Cirion . females.	Tip to Tip.	Wide t inside.	Points.	Locality		Owner.
343	0	2 1 .	201	13 7	Woburn .		Smithsonian Institution.
333	57	25%		21 - 17	?		Mess of 19th Punjabi Infantry.
32-	6,3	1 3 [18%	5.8	Near Pekin		Sir Edmund G. Loder, Bart.
. ;2	73			10 8	Woburn		Duke of Bedford,

Order a measurement.

Each time of this head measures 32½ inches.



Head of Milu Deer.

Length on out- side curve.	Circum- ference.	Tip to	Widest inside.	Points.	Locality.	Owner.
-31	6			3+3	?	American National Collection.
31	$6\frac{1}{2}$	271		3+3	5	Hon. Walter Rothschild.
31	$4\frac{3}{4}$	23		7+6	?	British Museum (Duke of Bedford).
-30 ³ / ₄	5	$35\frac{1}{10}$	35 1 6	11+10	Imperial Park, Pekin	Paris Museum (Type specimen).
30	54	$24\frac{3}{4}$		3+2	;	G. L. Harrison.
291	51			5 + 5	?	Duke of Bedford.
-291	63	29	<i></i>	3+2	?	Major W. Anstruther Gray.
281	58	26½		3+3	?	Hon. Walter Rothschild.
281	$6\frac{1}{2}$			8+8	Woburn	Duke of Bedford.
27	5 7	$20\frac{1}{4}$		6+5	Do	British Museum.
26½		16	18½	8+7	Do	Royal Scottish Museum.
1 25	5			6+4	Do	Duke of Bedford.
, 22	4 ⁵ / ₆			4+3	Do	Do.

⁻ Owner's measurements.

¹ Back tine measured 28 inches from beam of antler.



Skull and Antlers of Indian Muntjac.

The MUNTJAC or BARKING DEER (Cervulus muntjac).

This species is the typical representative of a genus of small Indo-Malay deer differing widely from all the foregoing groups. antlers, which do not usually exceed half the length of the head, have a short brow-tine and an unbranched beam, and are supported on long skin-covered pedicles, continued downwards as convergent ridges on the forehead, whence the name of rib-faced deer. Tufts of bristly hair occupy the position of the antlers in the females. The muzzle has a large naked portion, and although there is generally a pair of glands on the face, there are none either on the hock or the cannonbone. The young may be spotted, but the adults are uniformly coloured. The range of the typical muntjac, which is one of the reddishcoloured species, extends from Ceylon and India through Burma to China, the Malay Peninsula, Sumatra, and Java. Reeves' muntjac 'C. recresi, from China and Formosa, a smaller species, is also reddish, as is Sclater's muntjac (C. sclateri) of Central China, and the Sze-chuan C. lachrymans; C. bridgemani, of Central China, is darker; in the Tenasserim muntjac (C. few) and the larger hairy-fronted muntjac 'C. crinifrons, of Eastern China the general hue is dark purplish sepiabrown, with white on the buttocks and under surface of the tail. The average height of the male of the typical species at the shoulder is from 20 to 22 inches, and the weight about 38 lbs.; a female stands about 20 inches and weighs about 32 lbs.

Several local races of the ordinary muntjac doubtless exist. The typical form 'C. muntjac typicus, is the Javan animal; the Burmese race has been distinguished as C. muntjac grandicornis, while the Indian form is known as C. m. vaginalis, and the Siamese as C. m. curvostylis.

The antlers of the Burmese race are large and massive. The earlier name *Muntiacus* is often used in place of *Cervulus*.

Length on outside curve of antler from burr to tip.	Circumference above burr.	Tip to Tip.	Locality	·.	Owner.
$-10\frac{3}{8}$	• • •		Java .		H. Van Son.
1 - $9\frac{1}{2}$	$4\frac{1}{2}$	5	Singapore.		Sir Edmund G. Loder, Bart.
$8\frac{7}{8}$	3	$2\frac{3}{4}$	Java .		M. Maxwell.
-8 5	$3\frac{3}{4}$	6‡	Do		Dr. Albert von Stephani.
¹ 7 ⁵	$4\frac{1}{2}$	$3\frac{1}{2}$	Lombok .		Hon. Walter Rothschild.
7 §	3	3	Siwalik Hills		Major W. E. Stobart.
78	$2\frac{1}{4}$	$\mathbf{I}\frac{3}{4}$	U. Burma		L. H. Baker.
² 7 ¹ ⁄ ₄	34	$3\frac{7}{8}$	Lombok .		Hon. Walter Rothschild.
7	$3\frac{7}{8}$	$4\frac{1}{4}$	Burma .		MajGen. H. D'U. Keary.
-63	$2\frac{3}{4}$	$2\frac{1}{2}$	Perak .		Perak Museum.
63	24	3	Ranikhet .		Surgeon LieutCol. B. W. C. Deeble.
6 5	$2\frac{1}{4}$	$3\frac{1}{8}$	Java		J. C. Van Son.
$6\frac{1}{2}$	2 ⁵ / ₈	$3\frac{1}{2}$	Nepal .		British Museum (B. H. Hodgson).
$6\frac{1}{2}$	$3\frac{3}{8}$	$2\frac{5}{8}$	Buxa Duar		Capt. A. O. Creagh.
$-6\frac{1}{2}$	$2\frac{1}{2}$	31/8	Namba Forest	, Assam	LieutCol. H. S. Wood.
$-6\frac{1}{2}$	$2\frac{7}{8}$	$3\frac{1}{4}$	Ranikhet .		Col. E. T. Taylor.
$-6\frac{1}{4}$			Garo Hills		D. H. Allen.

CENTRAL CHINESE MUNTJAC (Cervulus lachrymans sclateri).

About equal in size to the last, with the upper part of the head and fore-neck bright yellow and the body browner than in *muntjac*. The lower portion of the front of the fore-legs is blackish brown. In the typical *C. lachrymans*, of Sze-chuan, the head is orange brown, and the limbs are brownish fawn. Weight of male 38 and female 36 lbs.

Distribution.—Central China.

Length on out- side curve of longest antler.	Circumference.	Tip to Tip.	Locality.	Owner.
5 ¹ / ₈	$2\frac{1}{2}$	38	China	Comdr. the Hon. R. O. B. Bridgeman, R.N.
5	2	3	Anghwei, China .	British Museum.
34	2	$2\frac{3}{4}$	Tungkuan Shan, C.	Comdr. the Hon. R. O. B. Bridgeman, R.N.
$2\frac{1}{2}$	I 5/8	3	Ningpo	British Museum (R. Swinhoe).
$-2\frac{1}{2}$	$I\frac{1}{2}$	$3\frac{1}{4}$	Do	Dublin Museum.

⁻ Owner's measurements.

¹ Determination provisional.

² Weight 37 lbs.



Skull and Antlers of Muntjacs in the collection of Sir Edmund G. Loder, Bart.

The HAIRY-FRONTED MUNTJAC (Cervulus crinifrons).

Length on out- length on out- longest antler.	Circumference.	Tip to Tip.	Locality.	Owner.
I ½		$4\frac{1}{2}$	Ningpo	British Museum.

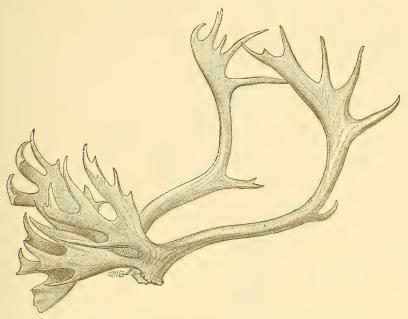
REEVE'S MUNTJAC (Cervulus reevesi).

Length on out- sine curve of lengest antler.	Circumference.	Tip to Tip.	Locality.	Owner.
4 ½	2 1	Shed	?	Sir Edmund G. Loder, Bart.
3 ½	2 }	3 ½	?	Comdr. the Hon. R. O. B. Bridgeman, R. N.
2 1/2	2.;	34	Feng Luang Shan	. Do.

${\tt BRIDGEMAN'S\ MUNTJAC\ (Cervulus\ sinensis=bridgemani)}.$

Length on out- life curve of a rage templer.	Circumference.	Tip to Tip.	Locality.	Owner.
5	2	3	Feng Luang Shan .	Comdr. the Hon. R. O. B. Bridgeman, R.N.
1 3 2	3	3	China	Capt. H. L. Archer-
1 1 %	1 2	1.3	Nyanking on the Yangtsi	Capt. A. T. Hunt, R.N.
, 1		38	China	Comdr. C. L. Lambe, R.N.

Determination provisional.



Antlers of Woodland Caribou. From a specimen in the British Museum.

The REINDEER or CARIBOU (Rangifer tarandus).

Distinguished from all other deer by the presence of antlers in both sexes; those of males being complex, with the brow-tines palmated and often unsymmetrical, and the bez, or second tine, also generally expanded. The muzzle is hairy, the ears and tail are short, and the throat has a fringe of long hair. The coat is very thick, and typically dark cinnamon-brown in colour above, with the limbs, a flankband, and some of the under-parts darker, the neck lighter, and more or less white in the region of the tail, on the under-parts, and fetlocks. In R. t, montanus the whole neck and lower surface are chocolatebrown, but in most American races there is some white in these regions, and R. t. pearyi, of Ellesmereland, is almost wholly white. The false or lateral hoofs are unusually large and spreading; and there is a patch of long white hair covering a gland on the hock, but none on the hind cannon-bone. Glands between main hoofs. Height at shoulder reaching to 4 feet 10 inches (Newfoundland). Hinds weigh between 224 and 280 lbs.

Reindeer inhabit the circumpolar regions of both hemispheres, in Europe including Scandinavia, Lapland, and Northern Russia; their southern limit varies from 52° to 54° N. latitude, while they extend to between 80° and 81° northwards.

Numerous local forms of reindeer are recognised. The more important are: (1) the Scandinavian reindeer (R. tarandus typicus) of Sweden and Norway, which is rather small with moderately expanded antlers; (2) the larger Finnish reindeer (R. t. fennicus), distinguished by the more vaulted nasal bones; (3) the woodland caribou (R. t. caribou) of the forest districts of Arctic America, characterised by its large size and the short,



Antlers of Woodland Caribou from Nova Scotia. From a specimen in the British Museum.

much-palmated antlers, in which the brow-tines form huge "shovels," one generally much larger than the other; and (4) the Barren-Ground reindeer (R. t. arcticus), from the open country north of the forests in America, nearly related to the Scandinavian reindeer, and characterised by its small bodily size, and the great length and simple form of the antlers, in which, except on the brow-tine, there is scarcely any palmation. The reindeer of Siberia and Novaia Zemlia, which approximate to the American types, have been named R. t. sibiricus and R. t. pearsoni. Names have been given to numerous American local forms, some of

which tend to connect the Barren-Ground with the woodland type. The Greenland caribou (R. t. grænlandicus) is of the Barren-Ground type, but all the rest are nearer the woodland form. Among these, the Newfoundland R. t. terræ-novæ has antlers of a very complex type; R. t. montanus and R. t. osborni are mountain-races, probably passing towards R. t. stonei and R. t. granti of Southern Alaska, which have somewhat longer antlers, and thus approach the Barren-Ground type, although they are large animals. Reindeer have brow-tined antlers, but otherwise appear to be related to the American deer.

A.—AMERICAN SPECIMENS.

Length on out- side curve.	Circum- ference.	Tip to Tip.	Widest inside,	Points.	Locality.	Owner.
62	$5\frac{1}{2}$	40	$50\frac{1}{2}$	21 + 17	Hudson's Bay .	Sir Edmund G. Loder, Bart.
5 9	61	$29\frac{1}{2}$	$40\frac{1}{2}$	11+9	Yukon	Hon. M. Egerton.
58	6	271	41	11+12	Cassiar	R. Hayne.
58	54	404	45	20+14	Labrador	H. Hesketh-Prichard.
1 57 5	51	13 8	•	13+7	Arctic America .	British Museum.
571	5 3	$29\frac{1}{4}$	36 3	18+10	Yukon	F. C. Selous.
57	$5\frac{1}{2}$	$16\frac{1}{2}$	26½	20+9	N. of Davis Strait .	Capt. C. R. E. Radclyffe.
55 3 €	$6\frac{1}{2}$	25	35	23+15	Cassiar	Col. L. Parry.
² 55 ³ / ₄	8		44 (outside)	26+18	Alaska	
$55\frac{1}{2}$	6	28	43	13+10	Stikin River	(Reed Collection). P. Niedieck.
55	6	43	48	12+14	Cassiar	F. C. Selous.
55	6	21	35	12+10	Do	W. A. Conduitt.
55	61/4	19	40	19+21	Do	F. H. Bailey.
$54\frac{1}{2}$	5₹	37‡	$44\frac{1}{4}$	16+13	Yukon	Sir A. Armstrong, Bart.
54	6	28	313	18+14	Do	S. R. Vereker.
54	54	31	38‡	13+16	Cassiar	Lord Osborne Beauclerk.
54	$6\frac{1}{2}$	29	37	22+11	Alaska	Hon. J. C. Lister.
54	$4\frac{3}{4}$	48	52	21+14	Canada	D. F. Mackenzie.
$53\frac{1}{2}$	$5\frac{1}{2}$	37	451	24+14	Labrador	K. V. Painter.
53	$4\frac{1}{2}$	483	54	12+11	Do	Hon. Walter Rothschild.
52½	5‡	15	26½	17+12	N. Canada	J. Talbot Clifton.
					2 -	

¹ R. t. arcticus.

² R. t. osborni.



Mr. Hesketh-Prichard's 49-Pointer.

	Circum- ference.		Widest inside.	Points.	Locality		Owner.
52	54	28‡	31	15+13	E. Yukon		J. Todd.
52	5	321	37	12+11	Cassiar .		Lord Hindlip.
52	52	6	29	15+20	N. Canada		E. E. P. Cuncliffe.
215	64	33	33	12+12	Cassiar .		F. C. Stern.
513	4 =	403	483	17+14	Hudson's Ba	ıy	Sir Edmund G. Loder, Bart.
51	5}	27	29}	15 + 15	Yukon .		A. D. Pass.
51	61	25 2	381	20+17	Cassiar .		P. N. Graham.
51	6	36	401	16+11	Do.		II. C. Wilson.
51	$-6\frac{1}{2}$	331	401	10+8	Do.		J. S. Shepherd.
51	6	32	361	15:12	Do.		M. W. Ward.
51	51	291	381	15 · 12	Do.		Capt. the Hon. G. H. Douglas
50}	41	311	35;	10+9	Do.		Pennant. Col. H. Appleton.

Length on out- side curve.	Circum- ference.	Tip to Tip.	Widest inside.	Points.	Locality.	Owner.
50	$6\frac{1}{4}$	24	35	16+13	Cassiar	Viscount Lascelles.
50	54	27	38	12+11	Barren Grounds	A. Barclay Walker.
491	5 3 3	$25\frac{1}{2}$	363	13+12	Cassiar	R. Beaumont.
$49\frac{1}{4}$	$5\frac{1}{2}$	38	$42\frac{1}{4}$	15+15	Do	C. H. Young.
491	5	30	32	19+15	Labrador .	H. Hesketh-Prichard.
494	$6\frac{3}{8}$	26 .	43	18+12	Newfoundland	St. George Littledale.
49	$6\frac{1}{2}$	25	$34\frac{3}{4}$	22+18	?	Sir W. Bass, Bart.
49	6	26	$\boldsymbol{27\tfrac{1}{2}}$	26+15	Yukon	H. B. Alexander.
49	$5\frac{1}{4}$	2 6 ¹ / ₄	$31\frac{1}{2}$	19+19	Do	L. Cadbury.
$48\frac{1}{2}$	$6\frac{1}{2}$	29	$36\frac{3}{4}$	20+18	Do	J. Todd.
48½	$4\frac{3}{4}$	194	$26\frac{1}{2}$	24+12	Do	R. H. Milvain.
$47\frac{1}{2}$	$6\frac{1}{2}$	$40\frac{3}{4}$	$38\frac{3}{4}$	15+14	Itcha Mts., B.C.	W. Neilson.
47 ¹ / ₄	$5\frac{3}{4}$	$24\frac{3}{4}$	34	22+18	?	C. H. Wilkinson.
46½	$5\frac{3}{4}$	$32\frac{3}{4}$	$35\frac{3}{4}$	18+12	Cassiar	Major J. F. Church.
46½	$6\frac{1}{2}$	161	28	32	British Columbia	J. Turner-Turner.
46½	$5\frac{1}{2}$	$38\frac{1}{2}$	$39\frac{1}{2}$	13+10	Newfoundland	T. P. Miller.
46½	$5\frac{1}{2}$	364	41	20+16	Do.	Major G. H. A. Ing.
$46\frac{1}{2}$	$4\frac{1}{4}$	26	32	11+8	Do.	J. T. Lewis.
46	$4\frac{1}{2}$	$24\frac{1}{2}$	$31\frac{1}{2}$	15+15	Do.	Capt. H. L. Cottingham.
46	$5\frac{1}{4}$	26 <u>3</u>	35	15+12	Do.	H. Charrington.
46	$5\frac{1}{2}$	$28\frac{3}{4}$	$31\frac{1}{2}$	10+10	Do.	R. H. Venables Kyrke.
45½	$5\frac{1}{2}$	314	$33\frac{1}{2}$	13+12	Do.	F. C. Williamson.
45	$5\frac{3}{4}$	$18\frac{1}{2}$	$37\frac{1}{2}$	17+18	Cassiar	J. M. Hanbury.
44 ³ / ₄	5≇		$29\frac{1}{2}$	29+26	Do	J. G. Millais.
$44\frac{1}{2}$	$5\frac{1}{2}$	$18\frac{3}{4}$	31	11+8	3	Major J. E. Platt.
44½	5釜	201	26‡	10+12	Newfoundland	W. R. Greene.
448	5 ¹ / ₈	34	37		Do.	C. H. Akroyd.
44	$5\frac{1}{4}$	$31\frac{1}{2}$	37	16+13	?	Sir Robert Harvey, Bart.
44	54	$24\frac{1}{4}$	$32\frac{1}{2}$	17+21	Newfoundland	J. G. Millais.
44	51/2	184	30	18+13	Do.	Admiral Sir William Kennedy.
44	$5\frac{3}{4}$	19	$26\frac{1}{2}$	17+14	Do.	Capt. A. G. Allgood, R.N.
43½	5	29‡	31	18+10	Cassiar	Sir Cavendish Boyle.

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Length on out- side curve.	Circum- ference.	Tip to Tip.	Widest inside.	Points.	Locality.		Owner.
431	51	$20\frac{1}{2}$	30	22+19	Newfoundland		A. Alexander.
43	5‡	171	$22\frac{1}{2}$	15+12	Do.		Major C. Hilder.
43	5 ½	2 I $\frac{1}{2}$	291	10+8	Cassiar .		Major R. H. Morgan.
$42\frac{1}{2}$	71	334	$3S_{\frac{1}{2}}$	22+18	Do	٠	R. Gordon Smith.
423	5 1/2	$26\frac{3}{1}$	303	23+13	Yukon		A. Benitz.
421	61	2S±	$35\frac{1}{2}$	24+15	Newfoundland		Lieut. H. C. Rawson, R.N.
42	6.4	24	313	17+14	Do.		T. A. Armstrong.
42	$4\frac{1}{2}$	14	$20\frac{1}{2}$	7 + 7	Quebec		Capt. the Hon. G. H. Douglas-
42	5½	36½	$39\frac{1}{2}$	20+12	Newfoundland		Pennant. Q. C. Colmore.
42	53	38	$4I\frac{1}{2}$	10+10	Do.		E. C. Russell.
42	61	$20\frac{1}{2}$	$30\frac{1}{2}$	13+12	Do.		G. C. Whitaker.
411	54	15₹	25 ³ / ₄	18+15	Do.		Prince Nicolas Ghika.
411	5 1/2	27	$30\frac{1}{2}$	16+18	Do.		Capt. F. Blacker.
41	5‡	$25\frac{1}{2}$	$28\frac{1}{2}$	14+13	Do.		Sir Robert Harvey, Bart.
41	6	35	33	20	British Columbia		LieutCol. C. C. Ellis.
41	5	$28\frac{1}{2}$	32	14+17	Newfoundland		S. H. Whitbread.
404	6§	$32\frac{1}{2}$	37	20+17	Do.		His Majesty the King.
403	$5\frac{1}{2}$	213	29	13+9	Do.		Major S. Upperton.
$40\frac{1}{2}$	5	32	$36\frac{1}{2}$	14+9	Do.		Sir Philip Brocklehurst, Bart.
40	53	193	26	12+11	Do.		P. B. Vander Byl.
40	6	312	$35\frac{1}{2}$	19+14	Do.		Admiral Sir William Kennedy.
40	$5\frac{1}{2}$	26	34 ³	12+11	Do.		Dublin Museum.
OWNER'S MEASUREMENTS.							
675	7		$44\frac{1}{2}$	38	Hudson's Bay		J. G. Millais.
. 62	53		50 (outside)	9+15	Alaska .		American National Collection
. 60	7 }		(outside) 43 d (outside)	20+14	Do		(Reed Collection). Do.
60	6,		50½	43	Kenai Peninsula		W. H. Case.
-60			34 (outside)		North Labrador		United States National
571	84		39½ (mt ice)	24+16	Kenai Peninsula		Museum, Washington. American National Collection.
3 58			. , ((1, 1)		North Labrador		United States National

¹ R. t. granti.

4 58

North Labrador . United States National Museum, Washington.

	Circum- ference.	Tip to Tip.	Widest inside.	Points.	Locality.	Owner.
$57\frac{1}{2}$	5 ³	36 3	47	21+18	Alaska	J. C. Phillips.
57					Cassiar	J. G. Millais.
$56\frac{1}{2}$					Do	C. Little.
55	7‡			23+22	Yukon	Wilson Potter.
54½	5 ¹ / ₈	30	$44\frac{1}{2}$	31	Alaska	F. T. Colby.
53 ¹ / ₄	$6\frac{11}{16}$	$44\frac{1}{2}$	55	22+23	Yukon	C. T. Summerson.
52	5½		39½ (outside)	11+10	Cassiar	American National Collection.
52.	7		42	17+14	Do	L. H. Green.
¹ 50 ¹ / ₂			45		Do	American National Collection.
50½	$6\frac{1}{2}$		371	13+18	Do	Wilson Potter.
49½				36	Do	Count Chas. Hoyos.
² 49			39 (outside)	22	W. Coast Greenland	American Museum of Natural
³ 49			34	36	3	History. Do.
$48\frac{1}{2}$	63	$26\frac{1}{2}$	34	27	Newfoundland .	F. Gillett.
48			43	19	Cassiar	Lieut. R. C. Dalglish, R.N.
48					Do	Col. Max. C. Fleischmann.
46	$6\frac{1}{2}$	39	43	13+19	Newfoundland .	G. L. Harrison.
¹ 44			381	36	Cassiar	Madison Grant.
4 42 $\frac{1}{2}$			(outside) $29\frac{1}{2}$	25	N.W. Coast of Hud-	American Museum of Natural
⁵ 4 I			(outside) 36	36	son's Bay Newfoundland .	History. Madison Grant.

B.—SIBERIAN RACE (R. tarandus sibiricus).

	Circum- ference.	Tip to Tip.	Widest inside.	Points.	Locality.	Owner.
$49\frac{1}{2}$	$4\frac{1}{2}$	$28\frac{1}{2}$	37	16+11	Upper Yenisei Valley.	J. G. Millais.
48	5	26	321	16+12	Do	J. C. Phillips.
47½	5	$20\frac{3}{4}$	281	16+14	Do	British Museum (Natural
46 <u>3</u>	45	201	$30\frac{1}{2}$	12+9	Do	History). Dublin Museum.
43	$5\frac{1}{2}$	29	303	14+11	Do	Hon. Walter Rothschild.
39	5₹	26½	27	6+11	Bought at Tashkend .	Sir Edmund G. Loder, Bart.

^{, 1} R, t. osborni. 2 R, t. grænlandicus. 3 R, t. stonei. 4 R, t. arcticus. 5 R, t. terræ-novæ.

C.—SCANDINAVIAN RACE.

Length on out- side curve.	Circum- ference.	Tip to Tip.	Widest inside.	Points.	Locality.	Owner.
1 60	5§	38§	418	22+15	?	Sir V. Brooke's Collection.
58‡	$4\frac{3}{4}$	$24\frac{3}{4}$	$35\frac{3}{4}$	7+7	Norway	Sir Robert Harvey, Bart.
571	58	25	$39\frac{1}{2}$	16+19	Do	Do.
55‡	5‡	32	$37\frac{1}{2}$	17+15	Do	P. B. Vander Byl.
55s	$6\frac{1}{2}$	38	43 ¹ / ₈	18+8	Sundal Fjelds, Nor-	Capt. Gerard Ferrand.
$54\frac{1}{2}$	4 \$	33‡	$40\frac{3}{4}$	15+13	way Norway	J. H. Thomas.
54½	$4\frac{3}{4}$	324	$41\frac{1}{2}$	18+13	Do	H. Hunt.
54	48	ıS	32	10+5	Do	G. C. M. Dewhurst.
54	$4\frac{1}{2}$	$28\frac{1}{2}$	35	10+7	Do	R. Persse.
54	5	22	$41\frac{3}{4}$	16+11	Do	Kenneth M'Douall.
53≩	$4\frac{1}{2}$	26	$35\frac{1}{2}$	12+8	Do	J. M. Hanbury.
53	5				Do	J. G. Millais.
53	48	$39\frac{1}{2}$	53‡	15+10	Do	A. Alexander.
53	5	111	354	16+12	Do	H. Hunt.
53	$4\frac{1}{2}$	30 ³ / ₄	421/2	12+8	Do	R. L. Scott.
$52\frac{1}{2}$	$4\frac{3}{4}$	201	501	19+13	Do	C. M. Black.
52‡	43	221	41	10+9	Do	A. D. Pass.
511	43	30	394	16+16	Spitzbergen	G. A. Shenley.
51	$4\frac{1}{2}$	31	$39\frac{1}{2}$	14+8	Norway	H.R.H. the Duc d'Orléans.
51	42	312	$40\frac{1}{2}$	12+6	Do	F. C. Selous.
51	$4\frac{1}{2}$	105	363	12+9	Do	A. Churchill.
5०३	4 🖁	24	29	16+13	Do	H.R.H. the Duke of Saxe-
50	41	271	(outside) 40½	11+10	Do	Coburg and Gotha. Sir H. Seton-Karr.
50	41/4	334	401	12+9	Do	J. C. Maxwell.
			С	WNER'S	S MEASUREMENTS	
595			413	11 : 14	Norway	R. L. Scott.
59½	7	38	44	15 + 16	Do	J. Whitaker.
59	41/2	422	46 (outside)	7 · 5	Do	H. J. Elwes.
58	6	3012	37	33	Do	S. Ratcliff.
521	5	27	365	26	Do	Abel Chapman.
					remains andiers.	

Extract from a letter of Mr. J. G. Millais, 14th August 1907:—

"For the purpose of comparison with other local races of reindeer I give the measurements of the twelve best specimens of Newfoundland caribou which I have obtained in the island. In all scientific accounts dealing with the measurements of reindeer antlers no notice is taken of the size of the large brow-shovel, a matter of great importance in determining the respective merits of individual heads. Mere length of antler is not everything in judging the qualifications of deer heads, whilst in this species in particular we must consider beam, span, number of points, symmetry, and size of the large brow-tine, a feature which adds so much to the general character.

Length on outer curve.	Circum- ference above bez-tine.	Breadth of brow-tine on anterior margin from base to top front point.	Widest inside.	Points.	Locality.
46	$5\frac{1}{2}$	14	31	45	Tamnapegawi Lake, 1906.
46	6	14	30	35	Upper Gander, 1905.
43	7	$16\frac{1}{4}$	35	36	Shoehill Ridge, 1906.
42	6	$16\frac{1}{2}$	34	44	Upper Gander, 1903.
42	5½	15	31	31	Resequit Hills, 1906.
40	5	$15\frac{1}{2}$	32	38	Upper Gander, 1905. Picked up.
40	5 1	I 5 ½	39	25	Do. 1905.
38	$5\frac{1}{2}$	15	28	35	Do. 1903.
38	$5\frac{1}{2}$	18	31	35	Millais's Lake, 1902.
37½	$6\frac{3}{4}$	$17\frac{1}{2}$	33	32	Migwell's Brook, 1905.
36	. 7	$16\frac{1}{2}$	29	49	Upper Gander, 1903.
36	$6\frac{1}{2}$	13½	38	32	Resequit Hills, 1906.

"The points of reindeer are difficult to count. No point should be included that does not fulfil the old watchguard or powder-horn test, unless it may be a clean blunt snag at least half an inch from the main horn.

"The Germans count everything as a point upon which a torn piece of paper will rest, but we regard all small excrescences that do not fulfil the old British conditions as of no account. For instance, Captain Cartwright's famous '72 point Labrador head,' which I have recently traced, and on which he counted every prominence, has in reality 5,3 points."

The ROEBUCK (Capreolus caprea).

(Also known as Capreolus capreolus.)

Roebuck may be recognised by the rudimentary tail, and the medium-sized antlers rising close together and almost vertically from the head, without a true brow-tine, and regularly forking at a point about two-thirds the total length, with the posterior prong again subdividing, so that the number of points is usually three. There is no gland or tuft on the hock, but one on the upper part of the outer side of the hind cannon-bone. In the European roe the height at the shoulder is about 26 inches. In winter the coat is dark speckly brown with a large white rump-patch, but in summer foxy red, with little or no white behind. As in the Japanese sika, the white hairs of the winter rump-patch expand under the influence of excitement to form a large disc. The range embraces the greater part of Europe as far as the southern Caucasus, Palestine, and perhaps Persia.

In the typical Scandinavian roebuck there is a yellowish tinge in the winter coat, which is wanting in the greyer Spanish *C. c. canus*; the Transylvanian *C. c. transylvanicus* differs from both by the distinct whitish throat and neck patches, while the British *C. c. thotti* is distinguished from all three by the face being darker than the body.

Length on outside curve.	Circum- ference.	Tip to Tip.	Locality.		Owner.				
13	4	$14\frac{1}{2}$	Germany			Viscount Powerscourt.			
$12\frac{1}{2}$		6‡	Forfarshire .	,		J. G. Millais.			
124	4 3	9	Servia			Viscount Powerscourt.			
I I $\frac{5}{8}$		6	Monymusk, N.B.			Sir Arthur Grant, Bart.			
1 I I ½			Orton, Speyside			Sir J. Macpherson Grant, Bart.			
II $\frac{1}{16}$	6	6	Perth			J. G. Millais.			
11	7‡		Ross-shire .			H. M. Warrand.			
11	$3\frac{3}{4}$	6‡	Dorset			F. Gordon Scott.			
II	516	$7\frac{1}{2}$	Ross-shire .			H. M. Warrand.			
111	28	83	Germany			Viscount Powerscourt.			
11	7 ½	67/8	Sligo, Ireland .			Sir Josslyn Gore Booth, Bart.			
11	3 ½	$6\frac{1}{2}$	Ballindalloch .			G. B. Macpherson Grant.			
108	2 ³ / ₄	$4\frac{1}{2}$	SW. Russia .			Count Bobrinskoy.			
105	2 ½	$10\frac{1}{2}$	Austria			J. R. Luchsinger.			
$10\frac{1}{2}$	61/2	6	Ballindalloch .			Sir J. Macpherson Grant, Bart.			
$10\frac{1}{2}$	$3\frac{1}{2}$	5≩	Inverness			C. Macpherson Grant.			

¹ Recorded by J. G. Millais (British Deer and their Horns).

² Abnormal (Perauque).

Length on outside	Circum- ference.	Tip to	Locality.			Owner.
curve.	4	61	Austria			H.R.H. the Duc d'Orléans.
108	31°6	5	Inverness-shire ¹			J. Hamilton Leigh.
101	31	6‡	Do.			E. G. Fraser-Tytler.
101	$3\frac{1}{4}$	2	Perthshire .			J. G. Millais.
101	3	21/4	Austria			R. Persse.
10	$2\frac{3}{4}$	4 7	Russia			H.R.H. Prince Arthur of Con-
10		$4\frac{1}{4}$	Ross-shire .			naught. J. J. de Knoop.
10	4	43	Glenmoriston .			J. Hamilton Leigh.
9 ⁷ 8	5	5	Dorset			J. E. Harting.
97/8	3₹	$5\frac{1}{2}$	Spain			A. de Zuleta.
93	$3\frac{1}{2}$	4	Hampshire .			J. Hamilton Leigh.
93	818		Sligo			Sir Josslyn Gore Booth, Bart.
9≟		$4\frac{3}{4}$	Aberdeenshire .			E. S. Hervey.
93	3	$6\frac{1}{4}$	Scotland			A. M. Yule.
95		7 ³	New Forest .			Hon. Gerald Lascelles.
$9\frac{1}{2}$	3	3½	Scotland			Col. Ralph Vivian.
$9\frac{1}{2}$	31	$2\frac{5}{8}$	Spain			R. de la Huerta.
$9\frac{1}{4}$	3	11	Scotland			G. L. Harrison.
918	2 ³ / ₄	33	Caucasus			P. H. Thomas.
9 1 8	$2\frac{1}{2}$	6‡	Scotland			K. M. Chance.
9	2 ³ / ₄	$2\frac{3}{4}$	Do			G. L. Denman.
			OWNER'S MEA	SUR	EME	ENTS.
13	$6\frac{1}{2}$	81/2	Germany			H.R.H. the Duke of Saxe-Coburg
121	3 ³	$4\frac{1}{2}$	Austria			and Gotha. LieutCol. J. Marriott.
2 I 2 ½			Perthshire .			R. Moncrieff.
12.11	6.12	5.4	Hungary			Count Wenkheim.
1118	4 3	•••	Scotland			Duke of Bedford.
II		4 ³ / ₄	Austria			Duke of Ratibor.
101	$3\frac{1}{2}$	$3\frac{1}{2}$	Bohemia .			H.S.H. Prince Alexander of Thurn
101			Beaufort, Ross-sl	hire.		and Taxis. J. G. Millais.
10	$2\frac{1}{4}$	$4\frac{1}{2}$	Ross-shire .			Sir Edmund G. Loder, Bart.
10	$2\frac{3}{4}$	5 ^{2/4}	Findrac			E. C. P. Hull.
10	4	35	Spain			Jose de Irruele.
9 ⁷ 8	$2\frac{1}{2}$	4 ⁵ / ₈	Bohemia			H.S.H. Prince Alexander of Thurn
93	3 ¹ / ₄	5	Spain			and Taxis. Abel Chapman.
	Found dead	-	² Recorded by J	. G. N	Aillais	(British Deer and their Horns).

¹ Found dead. ² Recorded by J. G. Millais (British Deer and their Horns).

MANCHURIAN ROEBUCK (Capreolus bedfordi).

Rather larger than the European species, with the antlers small and slender, the winter coat less brown, and the cheek-teeth taller.

Distribution.—Manchuria and Shen-si; the Kan-su roe has been separated as C. melanotis.

Length on outside curve.	Circum- ference.	Tip to Tip.	Locality.		Owner.
13 3	41	$7\frac{3}{4}$	Mongolia .		G. N. Atkinson.
12	31	7	W. Kan-su .		H. F. Wallace.
113	$3\frac{1}{2}$	$6\frac{1}{2}$	Shen-si		K. K. Horn.
103	$3\frac{1}{2}$	5 ½	W. Kan-su .		G. Fenwick Owen.
$10\frac{1}{2}$	3 3	5	Do		H. F. Wallace.
91	3	7 1	S. of Minusinsk		Sir Edmund G. Loder, Bart.



Head of Tien Shan Roebuck.

The ASIATIC ROEBUCK (Capreolus pygargus).

Paler and larger than the typical species, the height at shoulder being 30 to 34 inches; the ears shorter and more hairy, the white rumppatch larger, and the antlers longer and more rugose with numerous knotted snags or "pearls." Distribution.—From the northern Caucasus, the Altai, and mountains of Turkestan to Eastern Siberia. The typical representative is the Altai roebuck. The Tien Shan race (C. p. tianshanicus) has antlers somewhat different in form and more branched. In one type of this race the antlers diverge widely, with 4 or 5 tines each, but in a second the divergence and the number of tines are less.

Length on outside curve.	Circum- ference.	Tip to Tip.	Local	ity.			Owner.
*17₹	4	$12\frac{1}{2}$	Tien Shan				Hon. Walter Rothschild.
17	4 8	12 ³ / ₈	Do.				Col. C. B. Wood.
$16\frac{1}{2}$	$3\frac{1}{2}$	85	Upper Yenise	i Val	ley		J. Hamilton Leigh.
*16	$4\frac{1}{4}$	16	Tien Shan				R. F. Glyn.
ΙÓ	$4\frac{1}{2}$	12		?			Viscount Powerscourt.
154	35	$16\frac{1}{2}$	Siberia .				Count Bobrinskoy.
*153	$4\frac{1}{2}$	$13\frac{1}{2}$	Tien Shan				J. V. Phelps.
*153	34	12	Do.				Capt. C. M. Threlfall.
*154	5	$9\frac{7}{8}$	Do.				J. H. Miller.
* I 5½	$4\frac{1}{2}$	$18\frac{1}{2}$	Do.				E. W. Dixon.
*152	$3\frac{1}{2}$	14	Do.				Capt. J. N. Price Wood.
*15½	$3\frac{1}{2}$	15	Do.				P. F. Hadow.
* I 5½	4 ¹ 8	163	Do.				Capt. the Hon. G. H. Douglas
*151	5	113	Do.				Pennant. P. B. Vander Byl.
151	5 ¹ / ₂	8	Siberia .				Sir Edmund G. Loder, Bart.
15‡	$3\frac{1}{2}$	ΙI	Do				Major W. Anstruther Gray.
*151	41/2	11	Tien Shan				Lord Osborne Beauclerk.
*154	4	12	Do.				T. P. Miller.
15	3 3	II	Do.				C. H. Bury.
*15	4	$10\frac{1}{2}$	Do.				Prince Colloredo Mannsfeld.
15	3 8	15	Altai .				Royal Scottish Museum.
$14\frac{1}{2}$	$3\frac{3}{4}$	15½	Do				J. Hamilton Leigh.
$14\frac{1}{2}$	4	15	Do				Duke of Bedford,
$14\frac{1}{2}$	$3\frac{1}{2}$	125	Tien Shan				B. Chew.
$14\frac{1}{2}$	4	10	Do.				Col. A. H. Hussey.
$14\frac{1}{2}$	$3\frac{1}{2}$	151	Do.				Major A. D. Greenhill Gardyne.
*142	31	$13\frac{1}{2}$	Do.				W. R. Read.
			OWNER'S M	EAS	URE	ME	NTS.
*18 9	$^{1}6\frac{3}{4}$?				Carl Hagenbeck.
$15\frac{1}{2}$	$4\frac{1}{2}$	634	Tien Shan				J. C. Phillips.
f 1576	4 7 8	121	Siberia .				T. D. M. Cardeza.
	1.0		4.1				* TO: 01

* Tien Shan race.

1 Circumference of burr. .

Skull and Antlers of Alaskan Elk.
From a specimen in the possession of the Duke of Westminster.

The ELK or MOOSE (Alces machlis).

Elk are the largest members of the deer tribe, and distinguished by their ungainly form, long limbs, broad, produced, and flabby muzzle (all of which, except a small triangular patch below the nostrils, is covered with hair), the presence of a pendulous hairy organ (the socalled "bell") on the throat of the males, and the form and position of the antlers in that sex. The latter are set on the skull with their bases at right angles to the middle line of the face, and have neither brow nor bez tines. Usually the antlers expand after a short distance into a broad palmation or "shovel," carrying a number of snags on the outer border. In young elk each antler is divided in a fork-like manner into a small front and a larger hind portion. The main hoofs are long and pointed, and the lateral pair large; there is a gland and tuft of hair both on the hock and hind cannon-bone, the latter being situated high up. The tail is very short. From birth to old age elk are uniformly coloured; the general tint of the hair, which is long, coarse, and somewhat brittle, varying from yellowish grey to deep blackish brown above, with the legs lighter, and being usually darker in the American than in the European race. The height varies from 5 feet

9 inches at the shoulder in Scandinavian examples to as much as 6 feet 9 inches in the Alaskan race; the weight from 900 to 1600 lbs., that of the antlers being from about 60 lbs. to 100 lbs. The antlers of American elk are more expanded and carry more points than European specimens.

Elk inhabit the forests and marshy districts of Scandinavia, Eastern and Northern Russia, and the Altai; and in America (where they are invariably known as moose) at the present time are found in Alaska, Montana, Nova Scotia, and New Brunswick. In some localities Scandinavian elk not unfrequently show little or no palmation of the antlers, and thus approximate to the East Siberian form. Elk appear to be nearly related to roebuck.

A .- AMERICAN and ALASKAN ELK

(A. machlis americanus and A. m. gigas).

Greatest width.	Length to longest tine.	Circum- ference above burr,		Breadth of palm.	Points.	Loca	ality.		Owner.
$74\frac{3}{4}$	44	12	45	$13\frac{1}{2}$	15+13	Alaska			Capt. C. R. E. Radclyffe.
72	471	$9^{\frac{1}{4}}$	37½	16‡	20+17	Do.			Duke of Westminster.
70	46	9	$42\frac{1}{2}$	15	14+14	Do.			R. F. Glyn.
68	$47\frac{1}{4}$	9	$44\frac{1}{2}$	13	14+14	Do.			Prince Nicolas Ghika.
$67\frac{3}{4}$	43	ΙΙ	48	15	15+12	Do.			P. B. Vander Byl.
66	44	10	50	12	12+11	Do.			Capt. C. R. E. Radclyffe.
66	42	9\frac{3}{4}	42	$19\frac{1}{2}$	19+17	E. Yuko	n		F. C. Selous.
$65\frac{1}{2}$	42	8	52		20 + 2I	Alaska	٠		Capt. C. R. E. Radclyffe.
654		• • •			13+10	New Bru	ınsw	ick	F. H. Cook.
64	444	$7\frac{1}{2}$	$39\frac{1}{2}$	14	14+20	Alaska			Prince Nicolas Ghika.
64	47	83	40	13 ,	16+16	Do.			W. H. Welsh.
$63\frac{1}{2}$	$45\frac{1}{2}$	104	43	22	19+15	Do.			Hon. Walter Rothschild.
$63\frac{1}{2}$	45	9	41	15	15+13	Do.			David Davies.
63		$7\frac{1}{2}$		$16\frac{1}{2}$	16+15	Peace R	iver		J. G. Millais.
$63\frac{1}{2}$	37	$7\frac{3}{4}$	$39\frac{1}{2}$	15≩	12+12	Yukon			F. C. Selous.
$62\frac{3}{4}$	$49\frac{1}{2}$	$8\frac{3}{4}$	47	$14\frac{1}{4}$	16+8	Alaska			Capt. the Hon. F. E. Guest.
621	46	$7\frac{1}{2}$	46	14	14+13	Quebec			Col. J. Caswell.
62	461	$9\frac{3}{4}$	35	21	18+16	Alaska			Lord Elphinstone.
$59\frac{3}{4}$	$38\frac{1}{2}$	7	40	13	9+10	Cassiar			P. N. Graham.
594	48	73	$39\frac{1}{2}$	17	14+11	Alaska			W. F. Wailes-Fairbairn.
5 9	45	8	37	$I2\frac{1}{2}$	13+12	Do.			Sir H. Lennard, Bart.

Greatest width.	Length to longest tine.	above	Tip to	Breadth of palm.	Points.	Locality.	Owner.
58≩	36 3	burr. $6\frac{1}{2}$	36½	9	9+9	Cassiar	Lord Osborne Beauclerk.
58½	45	$7\frac{1}{2}$	42	$15\frac{1}{2}$	14+14	New Brunswick	E. C. Russell.
58½	43 ³ / ₄	6^{3}_{4}	35	$II\frac{1}{2}$	13+11	Do.	LieutCol. W. H. Greenly.
57½	38	8	$21\frac{1}{2}$	14	18+15	Canada	C. H. Akroyd.
571	36	$6\frac{3}{4}$	381	12	12+11	Cassiar	W. A. Conduitt.
571	41	81	35	ΙI	11+11	Maine	T. D. M. Cardeza.
57‡	35	$6\frac{1}{2}$	37	II $\frac{1}{2}$	10+10	Yukon	A. D. Pass.
57 ½	$40\frac{1}{2}$	8	35	$13\frac{1}{4}$	12+11	Maine	J. S. Braithwaite.
57	45	81	38	$13\frac{1}{2}$	10+9	Alaska	Hon. J. Cunliffe-Lister.
57	41	8	$43\frac{1}{2}$	12	11+14	Cassiar	Major J. F. Church.
56½	$39\frac{1}{2}$	$7\frac{3}{4}$	37	$13\frac{1}{2}$	14+11	?	Sir Peter Walker, Bart.
564	43	$7\frac{1}{2}$	$37\frac{1}{2}$	II	10+12	Cassiar	C. H. Young.
56 <u>‡</u>	$38\frac{1}{2}$	$7\frac{1}{2}$	304	15	15+11	Manitoba	J. B. M. Thompson.
56	41	8	33	$12\frac{1}{4}$	16+14	Cassiar	R. L. Fenwick.
56	$42\frac{1}{2}$	81	39	13	14+12	?	Hon. M. Egerton.
554	42 ³ / ₄	81	$36\frac{1}{2}$	7출	9+7	New Brunswick	Major J. C. B. Statham.
55	39₹	7	$36\frac{1}{2}$	II	10+8	Cassiar	Col. L. Parry.
55	43 ³ / ₄	8	40	174	16+14	Alaska	L. Cadbury.
$54\frac{3}{4}$	$36\frac{1}{2}$	$6\frac{3}{4}$	411	$9\frac{1}{2}$	12+11	Cassiar	J. S. Shepherd.
$54\frac{1}{2}$	$40\frac{1}{2}$	$7\frac{1}{2}$	35	13	9+9	New Brunswick	A. C. Bell.
$54\frac{1}{2}$	42	71	36	$11\frac{3}{4}$	12+11	Alaska	Sir Robert Harvey, Bart.
			C	WNEF	R'S MEA	SUREMENTS.	
1 $78\frac{1}{2}$						Yukon	Field Museum, Chicago.
2 77 $^{\frac{1}{2}}$					17+17	Alaska	P. Niedieck.
75	$41\frac{1}{2}$	10‡		$2I\frac{5}{8}$	23+19	Do	American National Collection (Reed Collection).
75 •						Do	Canadian Pacific Collection.
$74\frac{1}{2}$						Do	Chicago Academy of Science.
74						Do	American Museum of Natural History.
731				23	24+14	Do	C. F. Periolot.
$71\frac{1}{2}$	49	$8_{\overline{1}\overline{6}}$		16	20+20	Do	Sir Edmund G. Loder, Bart.
714	48	$9\frac{1}{2}$		174	18+16	Do	American National Collection.
711	48	$9\frac{1}{2}$		173	18+16	Do	Do.
71	48	8	50	$10\frac{1}{2}$	21	Do	J. C. Phillips.
" 69 1	• • •			26		Do	H. C. Thompson.

¹ Skull and antlers weighed 91 lbs. 2 Weight of antlers and skull, 77 lbs.; no lower jaw. 3 Height at shoulder, 6 ft. 8 in.?; skull and antlers, 68 lbs.; estimated weight, 1700 lbs.

Greatest width.	Length to longest tine.	ference above burr.	Tip to Tip.	Breadth of palm	Points.	Loca	lity.		Owner.
69	55	113	37	21	21	Alaska			F. B. Tolhurst.
68∄	49	11	36	$\mathbf{I}5\tfrac{1}{2}$	14+14	Do.			P. Niedieck.
68‡	41 7	•		16	17	New Br	unswi	ck	Dr. Munro.
67	$45\frac{1}{2}$	81	$45\frac{1}{2}$	12	18+11	Alaska			F. T. Colby.
67				• • •	23	Do.			J. H. Whitehouse.
66	$38\frac{1}{2}$	$9\frac{1}{2}$	44	14	28	New Bri	unswi	ck	S. Decatur.
$64\frac{1}{2}$	$47\frac{1}{8}$	878	45‡	154	31		?		Grahamstown Museum.

B.—EUROPEAN ELK (A. machlis typicus).

The Ural Elk has been distinguished as A. m. uralensis.

Greatest width.	Length to longest tine.	Circum- ference above burr.	Tip to Tip.	Breadth of palm.	Points.	Loca	lity.		Owner.
$48\frac{3}{4}$	$30\frac{1}{2}$	8	44	5	4+4	Norway			Capt. W. W. Pitt-Taylor.
48	31	7	$34\frac{3}{4}$	$8\frac{3}{4}$	10+9	Do.			G. J. Van Heek.
48	32	83	$37\frac{1}{2}$	$\operatorname{I}\operatorname{I}\tfrac{1}{2}$	10+9	Nr. St.	Pete	rs-	Prince E. Demidoff.
$47\frac{1}{2}$	304	$6\frac{3}{4}$	32 ³ / ₄	9	10+10	burg Norway			D. W. Stobart.
¹ 46	$30\frac{3}{4}$	$6\frac{1}{2}$	43	10^{1}_{2}	15	Do.			Abel Chapman.
441	30½	$7\frac{1}{8}$	$29\frac{1}{2}$	10	9+8	Do.			Sir Victor Brooke's Collection.
² 44	31 ³ / ₄	7‡	35	$10\frac{1}{4}$	11+8	Stuttberg	g.		0 0
43½	29	$7\frac{1}{2}$		\mathbf{IO}_{2}^{1}	24	Norway			Sir Peter Walker, Bart.
43 ⁸	32	6		$9\frac{1}{2}$	7+8	Russia		,	British Museum (Sir Edward
431	$25\frac{1}{2}$	5‡	35	3	6+6	Norway			Caley). F. H. Nye.
			70	WNER	'S ME	ASUREM	ENT	S.	
52	32	7		9	9+9	Norway			H. J. Elwes.
513	33	81/2	364	154	10+10	Do.			Capt. Gerard Ferrand.
49			35	6	8 + 8	Sweden			J. A. M'Mullen.
46	$32\frac{1}{2}$	71/2	33	$II\frac{1}{2}$	10+10	Do.			Capt. Gerard Ferrand.
45	31	7	28		17	Do.			S. Ratcliff.
431	$28\frac{1}{2}$	6	$33\frac{1}{4}$	11	12+10	Lithuania	ı		Prince Radziwill.

¹ Estimated weight, 1260 lbs.

² Estimated weight, 973 lbs. clean.



Antlers of East Siberian Elk, from the Hon. Walter Rothschild's specimen.

C.—EAST SIBERIAN ELK (A. machlis bedfordiæ).

This race shows a marked tendency to absence of palmation in the antlers, which usually have four or five large tines on each side. Certain antlers from East Siberia are, however, distinctly palmated, but appear to differ somewhat in form from ordinary European specimens.

Greatest width.	Length to longest tine.	Circum- ference above burr.	Tip to Tip.	Points.	Local	ity.	Owner.
$42\frac{1}{2}$	$30\frac{1}{2}$	$7\frac{1}{2}$	28	6+5	Siberia		Hon. Walter Rothschild.
$39\frac{1}{2}$	$26\frac{1}{2}$	8	37	4+3	Do.		British Museum.
$37\frac{1}{2}$	313	8	32	5+4	Do.		Hon. Walter Rothschild.



Head of White-tailed Deer. Shot by Mr. G. Graham-Clarke.

The WHITE-TAILED DEER (Mazama [Odocoileus] virginiana).

Exclusive of the wapiti, all the deer of America are distinguished from those of the Old World, except elk and roebuck, by the structure of the bones of the feet, as they also are by the form of the antlers, which are either regularly forked or spike-like. In the white-tailed deer the antlers are large and complex, with a long sub-basal snag, and the front prong of the main fork developed at the expense of the hind one, and carrying a number of snags on its upper surface. Tail long. A gland-tuft on the hock, and a small cylindrical white one with a black centre near the lower end of the hind cannon-Colour of upper-parts chestnut in summer and bluish grey in winter, with the under surface of the tail and the buttocks pure white. Typically from Eastern North America, where the height at the shoulder reaches to 3 feet I inch, but represented by numerous races in other parts of the continent, which gradually decrease in size and complexity of antlers towards the south, where they extend to Peru, Bolivia, and Guiana. Weight of a specimen of the typical race shot by Mr. Selous, 12 st. 7 lbs.

Mazama is the oldest name for the American deer, and may be

employed if all are included in one genus. If they are split up, *Mazama* is the title for the brockets, while the white-tail and its allies may be called *Odocoileus*, a name originally based on a fossil tooth of the typical species.

A.—NORTHERN RACES (M. virginiana typica, etc.).

This typical race inhabits Virginia, its range including eastern N. America from Ontario and Maine to Florida, and westward to the Missouri. In Canada and New England it is replaced by the larger and greyer *M. v. borealis*; and there are several other races in the States.

Length on outside curve.	Circum- ference.		Widest inside.	Points.	Loca	lity.			Owner.
278	58	Single antler	• • •	16	N. America				British Museum.
$27\frac{1}{4}$	$5\frac{1}{2}$	$9\frac{1}{2}$	19	8+6	New Bruns	wick			G. Graham-Clarke. (See illustration.)
$27\frac{1}{8}$	$4\frac{3}{4}$	141	19	6+6	N. America	ι.			British Museum.
26 <u>3</u>	$4\frac{3}{4}$	$9\frac{1}{8}$	20	20	Do.				Major James Grant.
264	$5\frac{1}{2}$	$4\frac{3}{4}$	174	13+13	Ontario				W. S. Browne.
26	$4\frac{1}{2}$	$5\frac{1}{2}$	18	8 + 7	Maine .			٠	T. D. M. Cardeza.
2 6	4\frac{1}{8}	9	$16\frac{1}{2}$	6+6		3			C. A. Kitson.
$25\frac{3}{4}$	$4\frac{1}{2}$	9	19	11	Maine .				H. S. Wellcome.
25	5	$12\frac{1}{8}$		6+10		?			British Museum.
25	5	$6\frac{7}{8}$	19	6+5	E. Kootena	у, В.С	J.		Col. A. Charlesworth.
$24\frac{1}{2}$	$4\frac{1}{2}$	$12\frac{3}{8}$	$18\frac{1}{2}$	6+6		?			J. Carr Saunders.
23 ³ / ₄	434	$7\frac{1}{2}$	$18\frac{1}{2}$	4+4	New Bruns	wick			W. H. Lindsay.
231	$4\frac{1}{4}$	65	17	6+5	Do.				Capt. E. C. Hamilton.
23	5	5	16	6+6	British Col	umbia			J. Turner-Turner.
23	$4\frac{1}{2}$	14	$20\frac{1}{2}$	7 + 5	Canada.				J. A. Douglas.
				OWNER	.'S. MEASU	REM	ENT	S.	
321	6	8	201	17+15	Michigan				J. C. Phillips.
29	6			18+24	Maine .				American National Col-
271		18 <u>1</u>		19+19	Missouri				lection. Berlin Museum.
25	54	63	23 ¹ / ₈	10+9	Michigan				Wilson Potter.
24	$6\frac{1}{2}$	12	16	7+6	Alberta				N. J. Dinnen.
24	45	1 19 $^{\frac{1}{2}}$		18	Nebraska				G. B. Grinnell.
$23\frac{3}{4}$	6	12	163	5+4	Wyoming				Col. J. J. Harrison.
					1 Spread.				



Head of Mexican White-tailed Deer in the Collection of 'Major W. Anstruther Gray.

B.—MEXICAN WHITE-TAIL (M. virginiana lichtensteini).

This is one of the smaller races of the species, the height at the shoulder ranging from about 33 to 36 inches, and the antlers being usually smaller and simpler than in the northern race.

Distribution.—Mexico. In Northern Mexico this race is represented by the Texan M. v. texana, and in the extreme south by M. v. tolteca, which does not turn red. The Central American specimens entered below belong to other races.

Length on out- side curve.	Circum- ference.	Tip to Tip.	Widest inside.	Points.	Localit	y.		Owner.
13 5	3 ³ / ₈	$6\frac{7}{8}$	II $\frac{3}{4}$	3 + 3	Sonora .			British Museum.
134	35	7	$II\frac{1}{8}$	4+4	Venezuela			Hon. Walter Rothschild.
I I 🖁	3	$4\frac{1}{2}$	91	3+3	Costa Rica			Sir Edmund G. Loder, Bart.
81	$2\frac{1}{8}$	$4\frac{3}{4}$	$6\frac{5}{8}$	3+4	Mexico .			Sir Victor Brooke's Collection.
				OWNER	R'S MEASU	REM	EN'	TS.
$18\frac{1}{2}$		$9\frac{1}{2}$		5+4	Sonora .			J. C. Phillips.
16½	41		$14\frac{1}{2}$	4+4	Rio-Frio Mts	s., Mex	ico	Pio Noriega.
14	$3\frac{1}{2}$	9			Sonora .			Major W. Anstruther Gray.



Head of Mule-Deer.

The MULE-DEER (Mazama [Odocoileus] hemionus).

Antlers with a much shorter sub-basal snag than in the white-tailed deer, beyond which the beam is directed outwards for a short distance, and then curves upwards to form a regular fork, both prongs of which are usually equal, and generally subdivide so as to form five points on each side. Ears large and heavy; tail short and small, naked below basally, with a black tip. Gland-tufts on hock and cannon-bone coloured like the leg; the latter of these elongated and situated on the upper half of the cannon-bone. General colour of upper-parts yellowish tawny in summer, brownish or rufous speckled grey in winter, with a brown horse-shoe mark on the forehead. Height at the shoulder, 3 feet 3 or 4 inches in the typical form. Weight (exceptional), 17 stone 2 lbs. (F. C. Selous).

Distribution.—The greater part of North America westward of the Missouri, extending from British Columbia to California. There are several local races, among which the South Californian M. hemionus peninsulæ is one of the smallest.



Head of Mule-Deer from Colorado, in the possession of Mr. H. A. James.

Length on out- side curve.	Circum- ference.		Widest inside.	Points.	Locality.	Owner.
34	5	18	21 ³ / ₄	19+18	Wyoming .	J. G. Millais.
30 5	5₹	$18\frac{3}{4}$	$24\frac{1}{2}$	5 + 5	?	W. Moat.
30	53		41	17	White River,	H. A. James.
285	$4\frac{1}{2}$	134	173	5+5	Colorado Wyoming .	Ford G. Barclay.
28½	5	$18\frac{3}{4}$	21	6+4	British Columbia	J. McI. M'Iver Campbell.
28½			$24\frac{1}{2}$		White River .	Major Maitland Kirwan.
28	5	20	$23\frac{1}{4}$	7+6	Wyoming .	J. Hall.
28	44	$22\frac{1}{2}$	$24\frac{3}{4}$	6 + 6	Do	H. A. C. Darley.
273	6	15‡	19‡	9+6	British Columbia	G. Wrey.
$27\frac{1}{2}$	5 3	14 ³	$24\frac{1}{2}$	6 + 5	Do.	Hon. Walter Rothschild.
271	5	$14\frac{1}{2}$	$24\frac{3}{4}$	6+5	Do.	C. W. Janson.
271	41	154	26 1	5+5	North America	T. L. Fisher.

Length on out- side curve.	Circum- ference.		Widest inside.	Points.	Locality.	Owner.
27	54	$19\frac{1}{2}$	$21\frac{5}{8}$	6+5	North America	Sir Edmund G. Loder, Bart.
27	51	$19\frac{1}{2}$	$22\frac{3}{4}$	5+5	British Columbia	D. H. Crake.
$26\frac{3}{4}$	4 ³ / ₄	195	$20\frac{1}{8}$	5+5	Wyoming .	Ernest Farquhar.
$26\frac{1}{2}$	5	$15\frac{1}{2}$	181	6+5	British Columbia	T. P. Kempson.
$26\frac{1}{2}$	$5\frac{3}{4}$		$17\frac{1}{2}$	12	Wyoming .	Lord Rendlesham.
$26\frac{1}{4}$	6‡	$13\frac{1}{4}$	18	5+4	British Columbia	A. H. Goodall.
26	5	154	$19\frac{1}{2}$	4+4	Do.	J. V. Colby.
$25\frac{1}{2}$	$4\frac{1}{2}$	$12\frac{3}{4}$	163	5+5	Sierra Nevada .	P. Grace.
$25\frac{1}{2}$	$5^{\frac{1}{2}}$	• • •	$2I\frac{1}{2}$	8	British Columbia	Sir Peter Walker, Bart.
$25\frac{1}{2}$	$4\frac{1}{4}$	27	29	5+5	Wyoming .	LieutCol. G. J. Fitzgerald.
25 ³ / ₈	$4\frac{1}{8}$	19	20	5+5	Do	A. H. Pollen.
251	5	$7\frac{1}{2}$	19‡	8+6	?	W. A. Warren.

OWNER'S MEASUREMENTS.

$32\frac{1}{8}$	6	$26\frac{3}{4}$	$44\frac{1}{8}$	25	B. Columbia		H. Whiting.
32	6	26		21+19	Wyoming		C. R. F. Lutwidge.
301	$6\frac{1}{2}$	184	30	12+11	Alberta .		N. J. Dinnen.
$29\frac{1}{2}$	5₹	25	$25\frac{1}{4}$	8 + 5	Montana .		J. C. Phillips.
29	$6\frac{1}{2}$	$29\frac{1}{2}$		8+6	Do.		E. S. Cameron.

The BLACK-TAILED DEER (Mazama [Odocoileus] columbiana).

Nearly allied to the mule-deer, but of inferior size, with relatively smaller ears and finer hair; but specially characterised by the shorter gland and tuft on the hind cannon-bone, and the larger and longer tail, of which the upper surface is black and the lower mostly white.

Distribution.—Western North America, from Alaska, British Columbia, and Vancouver to California. The Alaskan race (M. c. sitkensis) has the upper surface of the base of the tail coloured like the back; in the Californian M. c. scaphiotus the general colour is paler and the ears are larger.

Length on out- side curve.	Circum- ference.	Tip to Tip.	Widest inside.	Points.	Locality.		Owner.
27	51	13	$20\frac{3}{4}$	5 + 5	5		R. H. Venables Kyrke.
19‡	4‡	14	$16\frac{1}{2}$	3+3	S. California .		Sir Victor Brooke's Collection.
			(OWNER'S	MEASUREMEN	TS	
22	41		122	•••	Vancouver .		Clive Phillipps-Wolley.
21	5	154	15	5+5	N.E. California		H. C. Nelson.
201	5	17	17	5+7	Do.		A. E. Leatham.
$19\frac{1}{2}$	5≩		21	5+5	?		Sir W. Gordon Cumming,
16	$3\frac{3}{4}$	$8\frac{1}{2}$	144	5+3	British Columbia		Bart. W. T. Hornaday.
					1 Outoido		

¹ Outside.



Frontlet and Antlers of Marsh-Deer.

The MARSH-DEER (Mazama [Blastoceros] dichotoma).

Antlers without a sub-basal snag, forking regularly, with both prongs again dividing, and the upper one usually more complex than the lower. Ears large, with white hair internally. Hair long and coarse, reversed on the withers for a short distance. General colour of upper-parts bright rufous chestnut in summer, browner in winter; legs black from the knees and hocks downward. No gland on hind cannonbone. Size, approximately that of a red deer. Although ten is the usual number of points, sports are common.

Distribution.—From Brazil to the inner wooded districts of Argentina.

Length on out- side curve.	Circum- ference.	Tip to Tip.	Widest inside.	Points.	Locality.	Owner.
25	$5\frac{1}{2}$	$18\frac{3}{4}$	211	5+4	Paraguay .	Hon. Walter Rothschild.
$24\frac{1}{2}$	5	16	18	5+5	Do	Admiral Sir William Kennedy.
$24\frac{1}{2}$	$6\frac{1}{2}$	21	$20\frac{1}{2}$	6+5	N. Argentina	J. Todd.
23§	5 ½	154	16‡	5 ± 4	Paraguay .	British Museum.
231	6		192	12	Do	G. R. Stuart.

Length on out- side curve.	Circum- ference.	Tip to Tip.	Widest inside.	Points.	Localit	:y.		Owner.
$22\frac{3}{4}$	58	$17\frac{1}{2}$	$18\frac{3}{4}$	7+6	Paraguay			Hon. Walter Rothschild.
22 5	6‡	20	$20\frac{1}{2}$	$5+\acute{5}$	Brazil .			Sir Victor Brooke's Collection.
22 ³ / ₈	$5\frac{1}{2}$	25	• • •	28	Argentina			A. Vans-Agnew.
221/4	$4\frac{1}{2}$	$18\frac{1}{2}$	$18\frac{1}{2}$	4+3	Do.			G. L. Harrison.
$21\frac{1}{2}$	$5\frac{1}{2}$	22	$16\frac{1}{2}$	6 + 6	Paraguay			S. Pulley.
$21\frac{1}{2}$	6	$13\frac{1}{2}$		4+4	Do		٠	H.R.H. the Duc de Montpensier.
$21\frac{1}{2}$	5	$12\frac{3}{4}$	16	5+5	Do			Admiral Sir William Kennedy.
				ow	NER'S ME	ASUR	EM	ENTS.
25 ¹ / ₈	5	$22\frac{1}{4}$	•••	6+7	Paraguay			Dr. Albert von Stephani.
$22\tfrac{1}{2}$	$7\frac{1}{2}$		I 5 ½	6+6	Argentina			Kenyon Slaney.
221	$6\frac{7}{8}$	26	25	5 + 5	Do.	,*		Sir Edward G. Loder, Bart,



Skull and Antlers of Chilian Guemal, shot in Patagonia by Mr. H. Hesketh Prichard.

The PAMPAS DEER (Mazama [Blastoceros] bezoartica).

A small deer nearly allied to the last, but with the front prong of the antlers simple, and the hind one divided. A whorl in the hair on the middle of the back and another at the base of the neck, so that the hair of the withers is directed forwards for a considerable distance. Colour of upper-parts light reddish brown, under-parts and lower surface of tail white; upper surface of latter black. Height at shoulder, 30 inches.

Distribution.—Brazil to Northern Patagonia, in open districts.

Length on outside curve.	Circum- ference.	Tip to Tip.	Points.	Locality.	Owner.
158	$3\frac{1}{2}$	5	6+7	Argentina	Col. Heber Percy.
$14\frac{5}{8}$	25	131	3+3	Do.	British Museum.
$14\frac{1}{2}$	3	$10\frac{7}{3}$	3+3	Do.	E. M. Crosfield.
141	3	11	3+3	?	Sir Edmund G. Loder, Bart.
14	44	$II\frac{1}{4}$	3+3	Paraguay .	Admiral Sir William Kennedy.
$13\frac{1}{2}$	4 3	8	3+3	Do	R. A. Cooper.
13	$2\frac{1}{2}$	123	3+3	?	W. Livingstone-Learmonth.

The PERUVIAN GUEMAL (Mazama [Hippocamelus] antisiensis).

Together with the closely allied Chilian guemal, this species constitutes a group of deer characterised by the antlers forming a single fork. There is no gland-tuft on the hind cannon-bone, the short tail is rather bushy, and the hair coarse and brittle.

Distribution.—The high Andes, from Ecuador to Northern Chili.

Length on outside curve.	Circum- ference.	Tip to Tip.	Locality.		Owner.
$II\frac{3}{4}$	4 3	6	Bolivia, 13,000 ft.	•	A. Y. Hardy.
10	35	8	Ecuador		Hon. Walter Rothschild.
$9\frac{1}{2}$	7 5	4 5	Tinta, South Peru		British Museum (H. Whitely).
81	33	5	N. Argentina .		W. Buchanan Smith.

The CHILIAN GUEMAL (Mazama [Hippocamelus] bisulca).

Distinguished from the last by its superior size (shoulder-height $39\frac{1}{2}$ inches) and more uniform colouring, as well as by several details connected with the latter.

Distribution.—From the Chilian Andes to the plains of Patagonia.

Length on outside curve.	Circum- ference.	Tip to Tip.	I	Localit	у.		Owner.
113	$3\frac{7}{8}$	$9\frac{1}{2}$	Patagonia				H. Hesketh Prichard.
$10\frac{1}{2}$	35	$7\frac{1}{2}$		3			British Museum.
-71	3	4	Chili .				J. C. Phillips.
-4 5	I 7/8	$4\frac{1}{2}$	Do			•	American National Collection.

⁻ Owner's measurements.

The WOOD-BROCKET (Mazama nemorivaga).

The brockets are some of the smallest deer included in the genus *Mazama*, of which they are the typical representatives. They are recognisable by their simple spike-like antlers, the tufted crown of the head, and, in many, although not all, cases the radiation of the hair of the face from two whorls, which causes that on the nose to be directed downwards. The most widely distributed species is the red brocket (*M. americana*, or *M. rufa*), other species being the nearly allied *M. zetta* of Colombia and *M. sheila* of Venezuela, *M. tema* of Guatemala, and the small *M. simplicomis*. The present species is distinguished by its small size (height at shoulder about 19 inches), its pale pepper-and-salt brownish or grey colour, the streak on the forehead, and the absence of a gland and tuft on the hock.

Distribution.—Guiana, Colombia, Bolivia, Brazil, and Trinidad.

Length on front of horn.	Girth.	Tip to Tip.		Locali	ty.			Owner.
-4 ⁵ / ₈	$3\frac{3}{4}$	4	Trinidad					Dr. Percy Rendall.
4 3 8	\mathbf{I}_{4}^{3}	2	Do					Sir Edmund G. Loder, Bart.
-3	21/4	2	Do.					Dr. Albert von Stephani.
			_	Owner	's meas	surem		

¹ In previous editions this name was applied to the white-tailed deer, a usage which has been recently shown to be inadmissible.



Head of Musk-Deer.

The MUSK-DEER, or KASTURA (Moschus moschiferus).

She-lu, Chinese. Kastura, Kashmiri.

From all living deer except the Chinese water-deer this species is distinguished by the absence of antlers, the function of which is discharged in the male by long upper tusks. The tail is rudimentary and the fur coarse and brittle, while the lateral hoofs are very large. The males have a glandular pouch which secretes the musk from which the species takes its name. Height at shoulder about 20 inches, at rump 22 inches.

Distribution.—The forest-districts of the Himalaya as far west as Gilgit, at elevations of 8000 feet or more in summer, to Tibet, Siberia, Western China, Amurland, and Corea.

Length of Tusk on outside curve.			Loca	lity.				Owner.
4 exposed from gum	Kashmir							LieutCol. H. C. Tytler.
3 ³	Gurhwal							Capt. G. W. Burton.
3	Do.							British Museum (Hume Collection).
3	Amurland							British Museum.
24	Kashmir							Sir Edmund G. Loder, Bart.
		OV	VNEI	R'S	MEAS	SUR	EME	ENTS.
4	Ta Chin lu							M. Mitchell.
38	Chitral.							Capt. J. T. H. Lane.
31/4	Do.							Dr. Albert von Stephani.
3	Upper Kum	aon						Capt. K. Channer.

GIRAFFE



Skull of Transvaal Giraffe. Presented to the British Museum by the late Mr. Rowland Ward.

The GIRAFFE (Giraffa camelopardalis).

Ihuhla, Swazi.
Indhlulamiti, Zulu.
Tuthla, Basuto.
Luomba ningo, Chilala.
Intutwa, Chila.

Ngabi, Masawara. Giri, or Halgiri, Somali. Kameel, Boer. Nyama marakiti, Asenga. Vakumin deji, Hausa.

Zaraff, Sudani.

The long limbs and neck, the peculiarly formed head, and the blotched or netted hide, render giraffes distinguishable at a glance from all other living ruminants; with none of which, except the okapi, they have any very close affinity, although their nearest relatives are the deer. So great is their distinctness that, with the okapi, they constitute a family by themselves—the *Giraffidæ*. One of the most marked peculiarities of the giraffes is to be found in the horns, of which the largest pair rise from the head between the ears, and are covered during life with skin. They are never shed; and in the adult are immovably united to the bones of the skull, although separate in young animals. In addition to these, there is a more or less distinct third horn, or boss, situated on the forehead between the eyes, as well as a rudimentary pair at the back of the head, or occiput. Giraffes have a long, extensile tongue, hairy lips, and broad, low-crowned cheek-

teeth. There are no tusks in the upper jaw; and in the outermost pair of lower front teeth the crown, as in the okapi, is double, or bilobed. Lateral hoofs are wanting.

Among the local races of the species, the Nubian giraffe, G. c. typicus, is a pale-coloured animal with a large front horn and white legs; and from this the Kordofan G. c. antiquorum differs by the smaller and more numerous spots on the upper part of the legs. The Baringo giraffe, G. c. rothschildi, is characterised by the black spots of the old bulls and the jagged markings of the cows; and the Taposa G. c. cottoni is allied. The Nigerian G. c. peralta, the palest of all, is close to the Nubian. The Congo G. c. congoensis combines the presence of a third horn with fully spotted legs; this being also the case with the Kilimanjaro G. c. tippelskirchi, in which the markings have an irregular star-like form and the legs are more or less spotted. The races with fully spotted legs and a more or less rudimentary front horn include the Angolan G. c. angolensis, the North Transvaal G. c. wardi, and the South African G. c. capensis.

The SOMALI GIRAFFE (Giraffa reticulata)

The Somali giraffe (for which the name netted giraffe would be appropriate, were it not that it has a double signification) may be described as a dull, liver-coloured animal with a coarse network of narrow white lines dividing the ground-colour into a number of large, irregularly quadrangular and sharply defined patches. The head and upper part of the neck are, however, spotted, while the ears and the legs from the knees and hocks downwards are white.

Apparently this type of colouring is specially adapted for rendering the animal inconspicuous when in covert.

A.—NIGERIAN RACE (G. c. peralta).

Estimated maximum height.	At shoulder.	Locality.	Owner.
ft. ins. ∂-16 4	ft. ins. II O	N. Nigeria	. The late Capt. G. B. Gosling.

B.—EASTERN RACES (G. c. rothschildi, etc.)

Estima maxim heigh	um	At shoulder.	Locality.		Owner.
ft. i		ft ins.	British East Africa	•	Col. J. Caswell.
19	0	I2 O	Do.		T. P. A. Holford.
ð-18	7		South-east Africa		F. Vaughan Kirby

Estimated maximum height.	At shoulder.	Locality.		Owner.		
ft. ins. \$-18 6	ft. ins.	British East Africa			J. Hall.	
8-17 6		Do.			A. Vonwiller.	
8-17 3	10 11	Do.			British Museum (Major P. H. G. Powell-Cotton).	
∂-17 3		Do.			Lady Hindlip.	
δ-16 o		East Central Africa			The late A. H. Neumann.	
9-15 6	Average height	South-east Africa			F. Vaughan Kirby.	
16 0 9-13 10	8 91/2	British East Africa			British Museum (Major P. H. G. Powell-Cotton).	

C.—SOUTHERN RACES (G. c. capensis, etc.).

Estimated maximum height.	At shoulder.	Locality.		Owner.
ft. ins. 3-18 4	ft. ins.	Angola		Hon. Walter Rothschild.
<i>δ</i> −18 o	I2 O	South Africa .		The late Sir W. Cornwallis Harris.
8-17 0		W. Matabililand		F. C. Selous.
9-16 10		North Kalahari.		H. A. Bryden.

⁻ Owner's measurements.



Head of Prongbuck.

The PRONGBUCK or PRONG-HORN (Antilocapra americana).

Although commonly termed an antelope, this ruminant differs from all the members of the *Bovidæ* by the forking of the horns. These are annually shed from their bony sheaths and replaced by a new pair, which commence to grow up beneath the old ones before they are cast off. In consequence of this, the species is generally regarded as representing a family (*Antilocapridæ*) by itself. Horns absent or rudimentary in the female. Ears long and pointed, tail short, and neck maned. General colour chestnut, with a white rump-patch, and white bars on the throat. Height at shoulder, 36 inches; weight, 70 to 80 lbs. clean.

Distribution.—Western North America, from British Columbia to Mexico.

Length on outside curve.	Circum- ference.	Tip to Tip.	Widest inside.		Locality.		Owner.
153	6‡	5₹		Wyoming			St. George Littledale.
15∄	61	83		Do.			P. B. Vander Byl.
I 5½	$4\frac{1}{2}$	$9\frac{1}{2}$		Do.			W. R. Cookson.

Length on outside curve.	Circum- ference.	Tip to Tip.	Widest inside.	Locality.					Owner.
15\frac{1}{8}	6‡	$7\frac{5}{8}$?				Col. Ralph Vivian.
15	$5\frac{1}{2}$	I		Wyoming.					Sutton Timmis.
15	6			Do					H.R.H. the Duc d'Orléans.
15	58	5 3	IO 1	Do					St. George Littledale.
15	5≩	$7\frac{3}{4}$		Do.					Isaac Bell.
14½	5 3	12			?				C. F. Bengough.
14½			$12\frac{1}{2}$	Wyoming.					T. W. H. Clarke.
141	5 ² / ₃	11 3		Do					British Museum.
141/2	6		$9\frac{1}{2}$	Laramie Plains	, Wy	omir	g		Ford G. Barclay.
$14\frac{1}{2}$	65	51		Wyoming.					The late LieutCol. Hon. W. Coke.
$14\frac{1}{2}$	6	6		Alberta .					F. I. Mitchell.
141	6	2 ⁵ / ₈			?				Sir Victor Brooke's Collection.
141	7	$4\frac{1}{4}$			5				J. McI. M'Iver Campbell.
141	51	5≩		Wyoming.					Major A. J. Carstairs.
141	$5\frac{3}{4}$	54		Do					Earl of Dartmouth.
				OWNER'S M	EAS	URE	CME	NTS.	
201	1 7 ¹ / ₈	$5\frac{1}{2}$?				Wilson Potter.
17‡	$6\frac{1}{2}$		9	N.W. Canada					J. Whitaker.
17			20 outside		?				The late Otho Shaw.
17		$17\frac{1}{2}$	···	Wyoming					J. G. Millais.
16 1	61		$17\frac{1}{2}$	L. California	•				J. C. Phillips.
16	$6\frac{1}{2}$			N. Dakota					Theodore Roosevelt.
16	$5\frac{1}{2}$	12		Wyoming.					J. M. Geddes.
15	§ 6	$2\frac{7}{8}$		Teton Mounta	ins				Sir H. Lennard.
15	54	$2\frac{3}{4}$		N.W. Territo	ries				N. J. Dinnen.
15	t 5 ³	61		Wyoming.					Count E. Hoyos.



Horns of Bubal Hartebeest. From Sir Abe Bailey's specimen.

The BUBAL HARTEBEEST (Bubalis boselaphus).

This species commences the family of hollow-horned ruminants or *Bovidæ*, in which the horns are in the form of unbranched hollow sheaths supported on bony cores and carried permanently. The hartebeests are large antelopes with naked muzzles, abnormally long faces, doubly-curved horns, small apertures to the face-glands, large valvular nostrils (of which the lower rims are covered with stiff hairs), long, tufted tails, and large lateral hoofs. Both sexes are horned. The females have two teats.

Typical hartebeests have a whorl of hair on the forehead, and the hair on the middle line of the face directed downwards below this till a short distance above the nose, where there is another whorl; faceglands large. The present species is the smallest of the group, standing only 43 or 44 inches at the shoulder. It has a short pedicle supporting the horns, which are in the form of the letter U, and the colour is uniform tawny, with the tail-tuft black.

Distribution.—North-west Africa (interior of Morocco, Algeria, and Tunisia).

Length on front curve.	Circum- ference.	Tip to Tip.	Loca	ality.		Owner.
$15\frac{1}{2}$	81	$7\frac{3}{4}$	North Africa			British Museum.
$14\frac{3}{4}$	10	9	Senegal .			Hon. Walter Rothschild.
134	$9\frac{3}{4}$	9‡	Tunisia .			Sir Abe Bailey.
131	81	$7\frac{3}{4}$	North Africa			British Museum.



Head of Western Hartebeest.

WESTERN HARTEBEEST (Bubalis major).

Kanki, Hausa.

Apparently related to the preceding species, but larger, with more massive horns, which are more bent near the middle, and have long, smooth tips. Body uniform rufous fawn, varying from deep red almost to fawn-grey, face deep brown, the fore-legs streaked with dark brown or blackish from the knees downwards, and the tail-tuft black. Height at shoulder, from about 50 to 54 inches.

Distribution.—Gambia, Nigeria, and interior of the Cameruns, Togoland, etc.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality			Owner.
$26\frac{3}{4}$	$13\frac{1}{2}$	6‡	Nigeria .			Capt. E. E. Williams.
$-26\frac{1}{8}$	138	11	Do.			Sergeant Lefanu.
26	$12\frac{1}{2}$	$14\frac{3}{4}$	Do			Lady Constance Stewart-Richardson.
$25\frac{1}{2}$	$II\frac{3}{4}$	121/2	Do			Capt. P. A. Clive.
$25\frac{1}{2}$	$\mathbf{I}2\frac{1}{2}$	113	Gold Coast			Dr. J. H. Collier.
$25\frac{1}{2}$	$12\tfrac{3}{4}$	10	Nigeria .			Capt. C. C. West.
$25\frac{1}{2}$	$12\frac{1}{2}$	II ½	Do			R. J. Wolseley.
25 ³ / ₈	$12\tfrac{3}{4}$	111	Yauri, Hausa	State	es	Major J. W. Carroll.

⁻ Owner's measurements.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.	Owner.
25 1	$12\frac{3}{4}$	138	Near Borgu .	Capt. N. C. Welch.
25	$11\tfrac{3}{4}$	$10\frac{1}{4}$	Benue Valley .	Sir Abe Bailey.
25	$I2\frac{1}{2}$	101	N. Nigeria	H. J. Vicat.
25	113	81	Gold Coast .	Capt. Montray Read.
25	$11\frac{1}{4}$	$16\frac{1}{2}$	Nigeria	Capt. G. B. Scott.
$24\frac{3}{4}$	131	14	Do	Capt. H. T. G. Moore.
$24\frac{1}{2}$	II 1 1	123	Do	C. Francis.
$24\frac{1}{2}$	$II_{\frac{3}{4}}^{3}$	$8\frac{3}{4}$	Do	Capt. S. B. B. Dyer.
$24\frac{1}{2}$	121	18	Senegambia .	G. Fenwick-Owen.
-24	$\operatorname{I}\operatorname{I}\tfrac{1}{2}$	12	Togoland .	Berlin Museum.
24	12	$5\frac{3}{4}$	Nigeria	The late Dr. W. H. Langley.
24	$11\frac{1}{2}$	81	Do	K. V. Elphinstone.
24	12	11	Do	Capt. A. Noel Woods.
24	121	6	Do	Capt. S. C. Peck.
24	$\mathbf{I}2_{4}^{1}$	$8\frac{1}{2}$	Do	G. F. Lobb.
24	$\mathbf{I} 2\frac{1}{2}$	II $\frac{1}{2}$	Do	Capt. W. T. Wilkinson.
24	II	103	Do	Capt. W. D. Wright.
24	$12\tfrac{1}{2}$	11 ⁷ 8	Do	C. S. Griffiths.
23 ³ / ₄	$12\frac{1}{2}$	$6\frac{3}{4}$	Do	Capt. H. N. Kempthorne.
23 ³ / ₄	$12\frac{1}{8}$	148	S. Nigeria .	Capt. R. M. Heron.
$23\frac{3}{4}$	$12\tfrac{1}{2}$	11	Nigeria	Capt. G. C. Kelly.
$23\frac{3}{4}$	12	7 1	Gambia	G. Blaine.
235	12	51	N. Nigeria .	W. A. Judd.
$23\frac{1}{2}$	12	9	Nigeria	Major-Gen. P. S. Wilkinson.
$23\frac{1}{2}$	12	11	Do	F. R. O'Neill.
$23\frac{1}{2}$	12	41	Ashanti	C. Beddington.
$23\frac{1}{2}$	12	13½	N. of Benue River	W. H. Broun.
$23\frac{1}{2}$	II $\frac{1}{2}$	$4\frac{3}{4}$	N. Nigeria .	Capt. D. H. Thorburn.
$23\frac{1}{2}$	12	10	Do	Major R. McDouall.
$23\frac{1}{2}$	$10\frac{1}{2}$	141	Do	R. M. Borthwick.
9 21 3	10	8	Do	Major J. G. Browne.
21½	10 7	I I $\frac{1}{8}$	Portuguese Guinea	Major P. H. G. Powell-Cotton.

⁻ Owner's measurements.



Head of Tora Hartebeest.

TORA HARTEBEEST (Bubalis tora).

Worobo, Abyssinian. Tora, Sudani.

Horn-pedicle of medium length, the horns themselves in the form of an inverted bracket (---).

A.—TYPICAL RACE (Bubalis tora typica).

Height at shoulder, from 50 to 54 inches. Colour uniformly pale tawny fulvous, with the exception of the tail-tuft and chin, which are black. Although of the same uniform colour, this species is easily distinguished from B. boselaphus by its superior size and differently shaped horns. Weight, from 300 to 400 lbs.

Distribution.—Abyssinia and south and middle portion of Blue Nile. The Blue Nile B. t. rahatensis has the horn-tips markedly inclined inwards.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality		Owner.
$22\frac{1}{2}$	9	22 ³ / ₈	Sudan		Carl Hagenbeck.
22	$9\frac{4}{3}$	10	Do		Major Lord J. S. Cavendish.
2112	10	$10\frac{3}{4}$	Do		C. Bower Ismay.
21	9	183	Dinder Valley		C. E. Russell.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.	Owner.
20 ⁷ / ₈	91	$14\frac{1}{2}$	Sudan	Hon. Walter Rothschild.
20 7 8	$9\frac{1}{2}$	131	Do	Sir Edmund G. Loder, Bart.
2 03/4	10	$12\frac{1}{2}$	Do	Douglas M'Douall.
$20\frac{1}{2}$	$9\frac{1}{2}$	164	Do	Marquis Pizzardi.
$20\frac{1}{2}$	$10\frac{1}{2}$	$12\frac{3}{4}$	Dinder Valley .	Col. A. Colville.
$20\frac{1}{2}$	101	17	Sudan	Sir Abe Bailey.
20	10 ³	$16\frac{3}{4}$	Do	Major H. H. S. Morant.
20	9 5	155	Do	British Museum.
20	$9\frac{1}{2}$	$14\frac{3}{4}$	Lake Zuay, Abyssinia	Prince de Lucinge.
193	$9\frac{1}{2}$	$13\frac{1}{2}$	Dinder Valley .	Major C. P. B. Wood.
193	$9\frac{1}{2}$	II $\frac{1}{2}$	Do	Lord Villiers.
193	9	16 <u>1</u>	Dembelas, Abyssinia	British Museum.
₽ 19∄	8	15	Setit Valley	H. Leney.
19 5	$10\frac{1}{8}$	125	Abyssinia	Major P. H. G. Powell-Cotton
19½	83	174	Sudan	Capt. J. C. Graham.
$19\frac{1}{2}$	9	II $\frac{1}{2}$	Setit Valley	Countess of Sefton.
$19\frac{1}{2}$	9	II $\frac{1}{2}$	Dinder Valley .	C. E. Oakley.
19‡	$9\frac{1}{2}$	111	Blue Nile	G. L. Harrison.
\$ 19	$7\frac{1}{2}$	$18\frac{1}{2}$	Setit Valley	Earl of Sefton.

B.—KEILI RACE (Bubalis tora digglei).

Horns intermediate between those of A and $\mathcal C$; general colour dark fulvous, with a tinge of rufous.

Distribution.—Keili northward along the Ofat River on Sudan Abyssinian frontier.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.	Owner.
$-21\frac{1}{2}$			Abyssinian Border of the Sennar Province.	W. H. Diggle.
204	93	123	Do.	The Hon. Walter Rothschild.
20	10	11	Blue Nile	Hon. T. G. B. Morgan-Grenville.
195	10	14	Abyssinian Border of the Sennar Province.	W. H. Diggle.



Head of Somali Hartebeest. Shot by Col. H. G. C. Swayne.

C.—SOMALI RACE (Bubalis tora swaynei).

Sig, Somali.

Korkei, Galla.

Horns directed forwards and then inwards. Height at shoulder, about 47 inches; weight, about 300 lbs. General colour deep rufous chocolate-brown, with white tips to the hairs; face black, except the muzzle and a line between the eyes which, like the shoulders and upper part of fore-legs, as well as a patch on the upper part of the hind-legs, are black.

Distribution.—Interior of Somaliland and Shoa; in Somaliland on the dry plateau known as the *Haud*. The East Somali *B. s. noacki* is redder, with the face-mark inconspicuous and less defined.

Length on front curve.	Circumference.	Tip to Tip.	Locality.	Owner.
20 ¹ / ₄	87	$26\frac{3}{4}$	Somaliland .	Col. H. G. C. Swayne.
195	9	27	Do	C. Bulpett.
$19\frac{1}{2}$	$9\frac{1}{2}$	$22\frac{1}{2}$	Do	G. H. Cheetham.
19‡	$10\frac{1}{4}$	29	Do	Sir Abe Bailey.
-194	•••	$24\frac{1}{4}$	N. Somaliland .	J. Menges.

Length on front curve.	Circumference.	Tip to Tip.	Locality.	Owner.
-191		$16\frac{1}{2}$	Somaliland.	D. D. Haskard.
19‡	10	2 I ⁵ ₈	Do	H. A. Bryden.
19	10	$23\frac{1}{4}$	N. Somaliland	A. E. Butter.
-19	91	181	Do	Capt. M. M'Neill.
18≩	9 3	2 I	Do.	Capt. R. M. Backhouse.
183	9	$2I\frac{1}{4}$	Somaliland.	Major R. P. Cobbold.
183	10	19	Do	Capt. F. L. Livingstone-
183	$9\frac{1}{2}$	19	Do	Learmonth. J. R. Luchsinger.
183	94	16	Do	Ford G. Barclay.
$18\frac{1}{2}$	91	194	Do.	Capt. T. W. Greenfield.
183	83	18	Do	Col. H. G. C. Swayne.
18‡	$10\frac{1}{4}$	$22\frac{1}{2}$	Do	T. Morse.
181	9	171	Do.	Norman B. Smith.
18	834	$10\frac{3}{4}$	Do	Count J. Potocki.
18	$9\frac{1}{2}$	20	Do	W. F. Whitehouse.
18	9	22	Do	Major B. R. M. Glossop.
173	11	17	Gallaland .	Viscount Edmond de Poncins.
173	10	$21\frac{1}{2}$	Somaliland.	E. Lee Townshend.
173	10	20	Do	Digby Davies.
$-17\frac{1}{2}$	94	19	Do	Sir Edmund G. Loder, Bart.
17½	9	$18\frac{4}{3}$	Abyssinia .	I. Buxton.
♀ I 5½	7	II ½	Gallaland .	Viscount Edmond de Poncins.

⁻ Owner's measurements.



Head of Kongoni.

The KONGONI or COKE'S HARTEBEEST (Bubalis cokei).

Horn-pedicle moderate; horns bracket-shaped, very short and thick. Height at shoulder, 48 or 49 inches. Weight, about 300 lbs. General colour uniform bright fawn, with the lower lip somewhat browner, and the lower part of the rump paler; tail long, with the black tuft ascending some way up the hind surface. Two local races, B. c. rothschildi, from the district north of Lake Rudolf, and B. c. kongoni, from the Guaso-nyero, have been named, while the Nakuru hartebeest may represent a third race, B. c. nakuræ.

Distribution.—Eastern Africa, from Usagara northwards to Kilimanjaro, Masailand, and north of Lake Rudolf.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.			Owner.		
21	9	$13\frac{1}{2}$	East Africa				Capt. M. L. Pears.	
$-20\frac{3}{4}$	•••		Do.				Sir Abe Bailey.	
20	$9^{\frac{1}{2}}$	$14\frac{1}{4}$	Do.				Col. J. Caswell.	
20	9	134	Do.				Capt. R. Meinertzhagen.	
193	101	16	Do.				Major the Hon. W. G. Cadogan.	
192	93	1114	Do.				Capt. C. Brook.	
192	104	$13\frac{1}{2}$	Do.			• `	Capt. R. A. McClymont.	
19½	101	121	Do.				C. W. Turner.	

⁻ Owner's measurements.

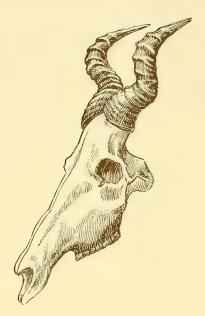
Length on front curve.	Circum- ference.	Tip to Tip.		Local	lity.		Owner.
191	$10\frac{1}{4}$	13	East Africa				The Master of Belhaven.
$19\frac{1}{4}$	10	$18\frac{3}{4}$	Do.				J. Gardiner Muir.
19‡	10	$17\frac{3}{4}$	Do.				Major J. A. Hannyngton.
194	$10\frac{1}{2}$	$10\frac{1}{2}$	Do.				Major P. H. G. Powell-Cotton.
194	9 ³	16	Do.				LieutCol. E. G. Harrison.
19	10	$15\frac{1}{4}$	Do.				A. Vonwiller.
19	93	15	Do.				Major C. E. D. Budworth.
19	$9\frac{1}{2}$	I I ½	Do.				Dr. Welsh.
19	$9\frac{4}{3}$	$I2\frac{1}{2}$	Do.				Marquis of Tweeddale.
19	91	$17\frac{1}{2}$	Do.				C. Frick.
19	101	12	Do.				W. F. Wailes-Fairbairn.
19	$9\frac{3}{4}$	16	Do.				Sir Robert Harvey, Bart.
19	$9\frac{3}{4}$	15	Do.				R. J. Cuninghame.
19	9	154	Do.				F. W. Belt.
19	$9\frac{1}{2}$	16	Do.				J. Anstruther.
18 7	10	20	Do.				R. L. Scott.
18 <u>3</u>	$9\frac{1}{4}$	$14\frac{1}{4}$	Do.				C. B. C. Storey.
18∄	10	144	Do.				H. Sampson.
18 3	10^{1}_{2}	$12\frac{3}{8}$	Do.				A. G. Murray Smith.
183	$10\frac{1}{2}$	$\mathbf{I} 2 \frac{1}{2}$	Do.				Duke of Alba.
183	IO	\mathbf{IO}_{2}^{1}	Do.				C. C. Wilson.
183	01	II 1/4	Do.				Dr. A. E. Herz.
183 4	10 1	19	Do.				H. Fowler.
185	878	164	Do.				Sir F. J. Jackson.
$18\frac{1}{2}$	$10\frac{1}{4}$	$14\frac{1}{2}$	Do.				British Museum.
181	$9\frac{1}{2}$	13	Do.				W. G. Niven.
181	10	I $2\frac{3}{4}$	Do.				J. G. Millais.
182	$9\frac{1}{2}$	151	Do.				H. G. Watson.
18%	10	13	Do.				Prince de Caraman Chimay.
181	9^{1}_{2}	16 <u>3</u>	Do.				Major A. Leslie Renton.
18 <u>1</u>	$IO_2^{\frac{1}{2}}$	15	Do.				Lieut. S. R. Bailey, R.N.
181	101	13	Do.				Duke of Sutherland.
181	$9\frac{1}{2}$	16	Do.				J. Leslie.
181	$IO_{\frac{1}{2}}$	$\scriptstyle 17\frac{1}{2}$	Do.				Capt. J. A. Morrison.
♀ 16‡	7.‡	144	Do.				E. H. Litchfield.

The two following specimens represent B. c. nakuræ:—

Length on front curve.	Circum- ference.	Tip to Tip.	Loc	cality.	Owner
192	$10\frac{1}{2}$	134	Lake Nakuru		Capt. E. Sartorius.
192	$10\frac{1}{2}$	$II_{\frac{1}{2}}^{1}$	Do.		H. W. Seton-Karr.

The following East African heads belong to the type regarded—together with the Nakuru hartebeest—by Dr. O. Neumann as hybrids between *cokei* and *lelwel jacksoni*:—

Length on front curve.	Circum- ference.	Tip to Tip.	Loc	cality	,	Owner.
22	101	114	East Africa			A. J. A. Douglas.
$2I\frac{1}{2}$	ΙΙ	$9\frac{3}{4}$	Do.			W. W. Ashley.
$21\frac{1}{2}$	11	${\rm I}2\tfrac{1}{2}$	Do.			Hon. Guy Wilson.
$2I\frac{1}{2}$	IO^1_2	16	Do.			G. C. Slacke.
$21\frac{1}{2}$	II $\frac{1}{2}$	$18\frac{3}{4}$	Do.			C. J. Blackburne Maze.
$21\frac{1}{2}$	11	$21\frac{3}{4}$	Do.			C. Mitchell.
211	12	12	Do.			Guy Fenwick.
214	$II\frac{3}{4}$	102	Do.			S. Milsom,
21	$10\frac{3}{4}$	$9\frac{1}{2}$	Do.			Capt. R. Meinertzhagen.
21	9 ⁸	II $\frac{1}{2}$	Do.			LieutCol. the Hon. W. A. W. Lawson.
21	$II\frac{4}{3}$	11	Do.			W. P. J. Fawcus.
21	$9\frac{3}{4}$	$9\frac{3}{4}$	Do.			Sir Richard Dane.
21	103	$10\frac{1}{2}$	Do.		,	Capt. M. A. Black.
$20\frac{3}{4}$	$10^{\frac{3}{4}}$	$8\frac{1}{4}$	Do.			S. E. Milsom.
$20\frac{1}{2}$	ΙΙ	$II\frac{3}{4}$	Do.			W. F. Wailes-Fairbairn.
$20\frac{1}{2}$	$10\frac{h}{2}$	15	Do.			N. C. Cockburn.
$20\frac{1}{2}$	$10\frac{1}{2}$	15₹	Do.			The Master of Belhaven.
201	$10\frac{1}{4}$	101	Do.			Major L. H. R. Pope-Hennessy.
$20\frac{1}{4}$	$10\frac{1}{2}$	$14\frac{1}{4}$	Do.			H. Clarkson Williams.
$20\frac{1}{4}$	12	12	Do.			I. Barrington White.
20	$10\frac{3}{4}$	14	Do.			Capt. the Hon. G. H. Douglas Pennant.
20	$10\frac{4}{3}$	II $\frac{1}{4}$	Do.			R. J. L. Ogilby.
194	II	$10\frac{3}{4}$	Do.			Percy C. Madeira.
19½	$II\frac{3}{4}$	111	Do.			A. de L. Long.
19½	\mathbf{II}_2^{L}	83	Do.			Major H. B. Dalgety.
$19\frac{1}{2}$	II $\frac{1}{2}$	$7\frac{1}{2}$	Do.			Major G. A. Swinton Home.
19½	ΙΙ	$13\frac{1}{2}$	Do.			Col. J. E. Gough.
19½	$10\frac{3}{4}$	$13\frac{1}{4}$	Do.			Sir F. J. Jackson.
19½	10	$II\frac{3}{4}$	Do.			J. Todd.
19½	IO_2^1	$9\frac{1}{2}$	Do.			Maharaja of Datia.
$19\frac{1}{2}$	ΙΙ	II_{4}^{3}	Do.			Capt. J. W. H. D. Tyndall.
\$ 18	$8\frac{1}{2}$	103	Do.			Sir F. J. Jackson.



Skull and Horns of Neumann's Hartebeest.

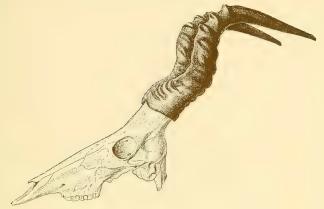
NEUMANN'S HARTEBEEST (Bubalis neumanni).

In this species, which may be merely a race of *B. cokei*, the horns are to a considerable degree intermediate between those of the *tora-cokei* and those of the *lelwel-cama* group.

Colour of hair fulvous fawn, much richer on the back, where there are also some darker spots, which may be stains or natural; below very much paler. Chin blackish; tip of tail black. Male brighter and darker in colour than the female. There are also on the back some patches with longer, thicker, almost whitish-buff hair, perhaps remains of the winter fur. Height at shoulder, from 48 to 50 inches.

Distribution.—East Africa, in the neighbourhood of Lake Rudolf.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.	. Owner.
$16\frac{1}{2}$	$10\frac{3}{4}$	81/4	N.E. of Lake Rudolf .	A. H. Neumann.
9 13½	7‡	93	E. shore of Lake Rudolf	Do.



Skull and Horns of Jackson's Lelwel Hartebeest.

The LELWEL HARTEBEEST (Bubalis lelwel).

Mangazi, Waganda. Teital, Sudani.

Related to the preceding, but the general colour uniformly rufous tawny, and the horns less abruptly bent. In the typical race the horns incline slightly outwards at the tips, and the lower part of the legs have some dark markings. In the Baringo or Jackson's race, B. l. jacksoni, the legs are coloured like the back, uniformly foxy red. B. l. niediecki of the White Nile differs by the parallel or inward direction of the horn-tips. B. l. insignis of the Albert Nyanza district has a black dorsal stripe and two small dark patches on the face, and dark markings on the lower part of the legs. Weight, about 450 lbs. Height at shoulder, about 52 inches.

Distribution.—Typically from the Bahr-el-Ghazal, Upper Nubia, and Kordofan; represented in the interior of British East Africa, north of Lake Baringo, and Uganda, by B. l. jacksoni, to which many of the undermentioned specimens belong.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.			Owner.
26	I I $\frac{7}{8}$	$I4\frac{7}{8}$	E. Africa .			E. H. Litchfield.
$-25\frac{7}{8}$	114	$9\frac{1}{8}$	Nr. Gondokoro			Capt. E. T. W. McCausland.
25 3	II $\frac{1}{2}$	14	E. Africa .			Capt. H. C. Hart.
$25\frac{1}{4}$	$\mathbf{I} 2 \frac{1}{2}$	71	Do			A. Saunderson.
251	I I ½	113	Do	,	,	F. C. Selous.
251	ΙΙ	$14\frac{1}{2}$	Do			W. N. McMillan.
25	121	I 2 5/8	Do			Duke of Medinaceli.

⁻ Owner's measurements.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality	y.			Owner.
25	104	103	White Nile .				Duke of Alba.
25	$II_{\frac{1}{2}}^{\frac{1}{2}}$	8	Sudan				Sir Kenneth Crossley.
25	121	II 1/2	Uganda .				Douglas M'Douall.
25	12	103	Do				Major A. W. Jennings Bramly.
24 3	12	141	Do				Capt., V. C. de Crespigny.
243	1112	134	Kordofan .				C. E. Lyall.
243	I I ½	11 ¹ / ₄	Sudan .				J. V. Colby.
243	1112	9½	East Africa .				Sutton Timmis.
	113	8	Uganda .		•	•	Capt. R. H. Leeke.
24 ⁵ / ₈	_		East Africa .			•	A. de Rothschild.
$24\frac{1}{2}$	$12\frac{3}{4}$	$7\frac{1}{2}$,	•	
$24\frac{1}{2}$	103	101	Do		•	•	Col. R. Bright.
$24\frac{1}{2}$	I I 4	18‡	Do, .		٠	•	C. Bower Ismay.
$24\frac{1}{2}$	12	$8\frac{3}{4}$	Do.		٠	•	O. Mosley.
$24\frac{1}{2}$	12	10	Sudan		٠	•	R. H. Willan.
241	ΙI	105	East Africa		•		A. Vonwiller.
24	12	$8\frac{1}{2}$	Do			٠	Duke of Alba.
24	II $\frac{1}{2}$	$10\frac{1}{2}$	Do				G. Henry.
24	$II_{\frac{1}{2}}$	9	Do.				Capt. H. C. S. Ashton.
23 ⁷ / ₈	10½	12	Do				Major P. H. G. Powell-Cotton.
$23\frac{3}{4}$	103	6	White Nile				Capt. A. H. Vivian.
233	$11\frac{1}{2}$	$II\frac{5}{8}$	Do.	,			Earl of Sefton.
$23\frac{3}{4}$	ΙI	$12\frac{1}{2}$	East Africa .				B. Dominick.
23 3	12	I I 3	Do				F. Santos Saurez.
23 ³ / ₄	$11\frac{1}{2}$	71	Do				Col. Max. C. Fleischmann.
234	$12\frac{1}{2}$	83	Do		٠	•	J. Leslie.
234	121	91	Do		٠	٠	Sir J. Hume Campbell, Bart.
235	11	13‡	Kordofan .				Capt. H. S. Hearn.
231	$12\frac{1}{2}$	104	East Africa .			•	Major H. B. Dalgety. Capt. P. Garrard.
$23\frac{1}{2}$	11½ 12	II ½	Uganda . East Africa .		•		R. J. Cuninghame.
$23\frac{1}{2}$ $23\frac{1}{2}$	114	58 7≩	Do		•		N. C. Cockburn.
23½ 23½	124	11 ¹ / ₂	Do				Col. Stephenson R. Clarke.
231	121	104	Do.				H. Sampson.
231	12	81/2	Do				Mrs. Percy C. Madeira.
231	$I_{2}^{\frac{1}{2}}$	$7\frac{1}{2}$	Uganda .				Miss C. Buxton.
23‡	11	7	Do				Dr. J. O. Shircore.
231	I I 1/4	101	East Africa				Capt. P. Chapman.
$23\frac{1}{8}$	12	$7\frac{1}{2}$	Do.				A. Fowler.
♀ 22	81/2	63	White Nile				Col. St. G. Henry.
921	103	114	Uganda			•	Dr. A. Paget.
201/2	101	134	Blue Nile			٠	Capt. E. S. Stephenson.
20	10	113	Do.			•	Capt. N. A. Orr Ewing
20	$9\frac{1}{2}$	102	Do				Capt. N. A. Orr-Ewing.



Head of Cape Hartebeest. Shot by Mr. R. Bosworth-Smith.

The CAMA or CAPE HARTEBEEST (Bubalis cama).

Kama, Bechuana.

Ingama, Makalaka.

Horn-pedicle greatly elongated; horns very sharply bent, and forming a letter V when viewed from the front. Height at shoulder, from 48 to 54 inches. General colour reddish brown, darker than in any of the preceding; face (except between the eyes), back of neck, chin, shoulders, thighs, and tail black or blackish; lower portion of buttocks with a conspicuous whitish or yellowish blaze. The typical southern form is extinct, and the name *B. cama selbornei* has been proposed for the race found north of the Orange River, as typified by the Kimberley herd.

Distribution.—Africa southwards of the Limpopo, but extending farther northwards along the confines of the Kalahari desert. This species (the rooi hartebeest) is now nearly exterminated in the Cape, but a few still linger in the old Bushman country in the north-west of Cape Colony. Although practically exterminated in the Orange River Colony and in most of the Transvaal (except to the north-west), numbers are to be found in the plains and open forest of British Bechuanaland, the Bechuanaland Protectorate, Basutoland, and in farms near Kimberley and Mafeking. In the North Kalahari and the desert-regions about the Botletli River big troops are to be met with. In Basutoland these hartebeests live in mountainous country, at a high elevation, where there is a heavy snowfall in winter.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.	Owner.					
26	$I2\frac{1}{4}$	$13\frac{3}{4}$	Orange River Colony	Sir Owen Philipps.					
$25\frac{1}{2}$	${\rm I}2\tfrac{1}{2}$	121	?	Sir Edmund G. Loder, Bart.					
25	11	10	Do.	C. Rube.					
24 ³ / ₄	$10\frac{1}{2}$	9 5	?	R. T. Coryndon.					
$24\frac{1}{2}$	12	11	Near Boshof, O.R.C.	Hon. Walter Rothschild.					
$24\frac{1}{2}$	12	$9\frac{1}{2}$	South Africa	C. D. Rudd.					
$24\frac{1}{2}$	$12\frac{1}{2}$	10	Ngamiland	F. T. Garbutt.					
$23\frac{3}{4}$	10	83	Do	British Museum (Sir Andrew Smith).					
23 ³ / ₄	II	5 3	5	J. C. Phillips.					
$23\frac{1}{2}$	$II\frac{1}{2}$	$10\frac{1}{2}$	Kamaland .	F. C. Selous.					
$23\frac{1}{2}$	$\operatorname{I}\operatorname{I}_{\frac{1}{2}}^{1}$	I I 5	Bechuanaland	G. L. Harrison.					
$23\frac{1}{2}$	12	$8\frac{1}{2}$?	N. H. Barton.					
	OWNER'S MEASUREMENTS.								
26	113	13	Natal	C. S. Mann.					
25 ³ / ₄	12	4	Orange River Colony	Sir Abe Bailey.					
25	I I 1 1	$10\frac{1}{2}$	Do.	Capt. W. Jardine.					
$24\frac{7}{8}$	11	7	Nata River	American National Collection.					
2 4 ⁵ / ₈	$11\frac{3}{4}$	11 1 8	?	B. Senior.					
$24\frac{1}{2}$	115	12	Damaraland	Berlin Museum.					
24 ³ / ₈	104	$9_{\bar{1}0}^{3}$	Do	Th. Rehbock.					
24 ³ / ₈	11	17 5	3	P. C. Keytel.					
24 ¹ / ₂	ΙΙ	$7\frac{7}{8}$	Orange River Colony	Sir Abe Bailey.					
24	IO^1_2	81/8	Griqualand	A. F. Williams.					
22	111	$14\frac{7}{8}$	Basutoland	R. Bosworth-Smith.					
9 21g	$8\frac{1}{2}$	$13\frac{1}{2}$	Orange River Colony	Sir Abe Bailey.					



Head of Lichtenstein's Hartebeest.

The KONZI, or LICHTENSTEIN'S HARTEBEEST (Bubalis lichtensteini).

Inkulando, Mashona. Kokotombwi, Barotsi. Konzi, Chila, Chilala, and Chibisa.

Konshi, Chinyanja.

Horn-pedicle very short and broad, and the horns themselves much flattened and curved inwards towards one another below the terminal backward inclination. Height at shoulder, 50 to 52 inches; weight, about 300 lbs. General colour tawny fulvous, becoming more rufous along the back, with the chin, tail-tuft, and front of cannon-bones black.

Distribution.—East Africa north of the Sabi River, including Nyasaland, Mozambique, German East Africa to Usagara, and N.E. and N.W. Rhodesia.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.	Owner.
$22\frac{1}{4}$	II 3	15	Barotsiland	T. G. Davey.
$22\frac{1}{8}$	$12\frac{3}{4}$	20	B.C. Africa	Sir Alfred Sharpe.
21½	121	9	E. of Tanganyika	O. L. Berringer.
$2I\frac{1}{2}$	${\rm I}2\tfrac{1}{2}$	9	Batoka Plateau, Northern Rhodesia	F. Smitheman.
21½	134	4		F. H. Melland.
211	14	II 7	Chambesi Valley	L. Harger.
211	124	$8\frac{1}{2}$	N.W. Rhodesia	Capt. P. R. Bald.

	61				
Length on front curve.	Circum- ference.	Tip to Tip.	Locality.		Owner.
$2I\frac{1}{4}$	$12\frac{1}{2}$	5‡	?		L. A. Wallace.
2 I ½	IO_8^7	91	N.W. Rhodesia		LieutCol. H. W. Wilberforce.
21	$12\frac{3}{4}$	$4\frac{3}{4}$	N.E. Rhodesia.		Col. C. F. Blane.
21	13	$13\frac{3}{4}$	N.W. Rhodesia		A. de L. Long.
21	ΙΙ <u>3</u>	41	Do.		P. K. Glazebrook.
21	13	81	Do.		G. F. Watherston.
21	$13\frac{1}{2}$	$10\frac{1}{2}$	Do.		Dr. W. D. Waterhouse.
$20\frac{3}{4}$	13	I 3½	Do.		G. L. Harrison.
$20\frac{3}{4}$	$\operatorname{II}_{\frac{3}{3}}$	98	N.E. Rhodesia.		Hon. M. W. Elphinstone.
203	ΙΙ	$7\frac{3}{8}$	N.W. Rhodesia		T. D. M. Cardeza.
$20\frac{3}{4}$	$12\frac{3}{4}$	$\mathbb{I} \bigcirc \frac{1}{2}$	Do.		J. H. Leche.
20 ³ / ₄	13	81	Do.		Lady Scott.
$20\frac{3}{4}$	$II\frac{3}{4}$	63	Do.		A. Willis.
$20\frac{1}{2}$	12	$4\frac{1}{2}$	Do.		Capt. J. Harington.
$20\frac{1}{2}$	13	9 7	Do.		Capt. the Hon. G. H. Douglas-
$20\frac{1}{2}$	$II\frac{1}{2}$	17	Do.		Pennant. W. F. Wailes-Fairbairn.
$20\frac{1}{2}$	$12\frac{1}{2}$	3‡	Do.		A. W. Griffin.
20 ¹ / ₄	14	7	N.E. Rhodesia.		R. Hayne.
$20\frac{1}{4}$	$13\frac{1}{2}$	61	N.W. Rhodesia		LieutCol. R. W. R. Barnes.
20	13	$5\frac{3}{4}$	Do.		Capt. F. C. L. Grieve.
20	$12\frac{1}{2}$	81/2	Do.		Capt. H. L. Archer-Houblon.
20	${\tt I2}^{\color{red} 1}_{\color{blue} 2}$	54	Do.		A. C. Brandon.
20	13	6	N.E. Rhodesia.		R. D. Waterhouse.
193	133	$7\frac{1}{2}$	N.W. Rhodesia		Hon. Guy Wilson.
193	$12\frac{3}{4}$	$9\frac{3}{4}$	Do.		Eastman Bell.
193	13	$7\frac{1}{2}$	N.E. Rhodesia.		Earl of Kingston.
193	$I2\frac{1}{2}$	6.‡	Do		Hon, W. Guinness.
193	13½	$7\frac{3}{4}$	Do		A. Dickinson.
\$ 15	87/8	4 ⁷ / ₈	Sabi Valley, Masho	naland.	British Museum (F. C. Selous).
			OWNER'S MEAS	UREME	ENTS.
23	13	71/2	5		Major H. Chamney.
22 ⁷ / ₈	II	77	3		Mr. Justice Hopley.



Head of Hunter's Hartebeest (Female).

The HIROLA, or HUNTER'S HARTEBEEST (Damaliscus hunteri).

Arôli, Somali.

Blanketta, Galla.

With this species we come to a group of antelopes closely allied to the true hartebeests, but with the frontal region not elevated into a horn-pedicle, and the horns themselves forming in most cases a lyrate or simple curve, and the face of medium length. The hair of the face is directed uniformly upwards; there is a transverse fold of skin, underlain by fat, immediately behind the horns. In the present species the slender horns are indeed doubly curved, although without the sudden angulation of the true hartebeests. They slant upwards and outwards, and then bend downwards, after which the long points are directed upwards. Colour uniform rufous, with a chevron on the face, the inner surface of the ears, and the tail-tuft white. Height at shoulders, about 48 inches; build light and graceful.

Distribution.—Southern Somaliland (Jubaland) to north bank of Tana River.

Length.		Circum-	Tip to			
On front curve.	Straight.	ference.	Tip.	Locality.	Owner.	
$26\frac{3}{4}$	$22\frac{1}{2}$	85	IO^1_2	Joreh	I. N. Dracopoli.	
26 3		81	$14\frac{1}{2}$	Jubaland	British Museum.	
$26\frac{1}{4}$	22	81/8	${\rm I}2\tfrac{1}{2}$	Tana Valley	Sir Robert Harvey, Bart.	
26	$22\frac{1}{4}$	$8\frac{1}{2}$	$15\frac{1}{2}$	Do	G. Blaine.	
-25	22 ¹ / ₈	8	12	Jubaland	Col. E. G. Harrison.	
24 ⁷ / ₈		$8\frac{1}{8}$	$15\frac{1}{2}$	Tana Valley	H. C. V. Hunter.	
24 ⁵ / ₈	211	88	9 ³	Do	Sir Robert Harvey, Bart.	
- 9 2 I ½	$19\frac{1}{2}$	5 ⁷ / ₈	II	Jubaland	Col. E. G. Harrison.	
♀ 20ᇂ	18	6	$15\frac{1}{4}$	Tana Valley .	G. Blaine.	
201		55	87	Do	Hon. Walter Rothschild.	
19½	178	5 $\frac{3}{4}$	10	Joreh	I. N. Dracopoli.	

- Owner's measurements.



Hunter's Hartebeest. Shot by Mr. I. N. Dracopoli.



Head of Korrigum. Shot by G. Blaine.

KORRIGUM, TIANG, or TOPI (Damaliscus corrigum).

Korrigum, Bornow. Devvi, Hausa.

Horns with a single slightly lyrate curve. Size large. General colour reddish with a blackish blaze on the face and usually similar patches on the upper part of the fore-limbs, hips, and thighs, which extend in the form of a garter on the inside of the limbs above the knees and hocks. Tail-tuft black. Face-blaze usually black, but buffish or white in the guasingishu (D. c. phallius).

A .- TYPICAL KORRIGUM or SENEGAL HARTEBEEST

(D. corrigum typicus).

In this race the black markings are strongly pronounced, and a streak is given off from the face-blaze to run upwards and outwards below the eye. The lower parts of the legs appear to be coloured like the body.

Distribution.—Senegambia and the interior of West Africa.

Length on front curve.	Circum- ference.	Tip to Tip.	Localit	ty.		Owner.
$-2S\frac{1}{2}$	$10\frac{3}{4}$	$4\frac{3}{4}$	N. Nigeria			Capt. C. F. Watson.
$-26\frac{3}{4}$	9 ¹ / ₈	158	Senegambia			Imperial Museum, Vienna.
26½	$9\frac{3}{4}$	5‡	Lake Chad			Major D. F. MacCarthy Morrogh.
-25 §	10	8	Do.			Sir Edmund G. Loder, Bart.
$-25\frac{1}{4}$	$9\frac{1}{2}$	14	Gambia .			Capt. W. B. Stanley.
21 ⁷ / ₈	10	63	Lake Chad			A. L. Ross.
$24\frac{3}{4}$	$9\frac{1}{2}$	41	N. Nigeria			Capt. L. C. Brodie.
24 ³ / ₄	9	9	Nigeria .			Capt. A. B. Baillie-Hamilton.
24 5	$IO_{\frac{1}{4}}$	7	Benue .			Capt. E. J. Wolseley.
245	93	91	Gambia.			G. Blaine.
$-24\frac{5}{8}$	101	9	5			J. C. Phillips.
248	9\$	$4\frac{3}{4}$	Lake Chad			Major J. B. Cockburn.
$24\frac{1}{2}$	$9\frac{1}{2}$	103	Do.			Capt. P. Chapman.
♀ 24 <u>1</u>	7	$3\frac{3}{4}$	Do.			Major D. F. MacCarthy Morrogh.
$24\frac{1}{4}$	$10\frac{1}{2}$	$13\frac{1}{2}$	N. Nigeria		•*	Dr. G. J. Pirie.
241	10	10	Do.			P. E. Bradney.
24	$9\frac{1}{2}$	6	Lake Chad			Capt. L. C. Jackson.
24	10	5	N. Nigeria			Major T. Astley Cubitt.
24	9	9	Lake Chad			Sir F. Lugard.
$23\frac{3}{4}$	$9\frac{1}{2}$	9‡	Do.			Major E. J. Lugard.
23 ³ / ₄	91/4	$7\frac{3}{8}$	Nigeria .			W. F. Gowers.
$23\frac{3}{4}$	10	8	Lake Chad			Capt. S. B. B. Dyer.
23 ³ / ₄	9 8	12	Do.			C. S. Burnett.
23 ³	91/2	$13\frac{1}{2}$	N. Nigeria			Capt. C. C. West.
234	104	13.	Do.			Capt. G. Bonham-Carter.
9 21 ³ ₄	63	51	Do.			H. Maynard.

⁻ Owner's measurements.

TIANG 139



Skull and Horns of Tiang.

B.—TIANG (D. corrigum tiang).

Tiang, Dinka.

The East African representative of the korrigum, from which it differs by the larger area of black on the inside of the limbs, and the tan colour of their lower portion. The tiang of the Mau Plateau, B.E.A. (D. c. selousi) is distinguished by the bright chestnut colour of the muzzle and of the area round the eye above the dark eye-stripe. D. c. jonesi of the Upper Sudan is said to inhabit sandy tracts in place of swamps, and is reported to be a plumper and browner animal, with no dark eye-stripe, and no dark markings on the limbs.

Distribution.—Sennar, Kordofan, and the Bahr-el-Ghazal.

Length on front curve.	Circum- ference.	Tip to Tip.	Localit	y.	Owner.		
25 ⁷ / ₈	$9\frac{3}{4}$	I I ½	Kordofan		Major C. J. Hawker.		
$24\frac{3}{4}$	$10\frac{1}{2}$	95	Do.		Major A. J. B. Percival.		
24½	$9\frac{1}{2}$	9	White Nile		H. Cookson.		

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.	Owner.
$24\frac{1}{2}$	10	7 1 8	W. Kordofan .	A. L. Butler.
$24\frac{1}{4}$	to	154	Kordofan .	Sir Robert Harvey, Bart.
23 ³ / ₄	8	$7\frac{1}{2}$	White Nile .	T. D. M. Cardeza.
$23\frac{1}{2}$	10	102	Kordofan .	G. L. Harrison.
$23\frac{1}{2}$	834	$7\frac{1}{4}$	Sudan	Col. J. J. Asser.
231	$8\frac{3}{4}$	81/4	Dinder Valley	C. D. Eyre.
$23\frac{1}{4}$	$8\frac{3}{4}$	$2\frac{7}{8}$	Sudan	C. R. Gurney.
23	$9^{\frac{1}{2}}$	$8\frac{1}{2}$	White Nile .	E. C. Crispin.
$22\frac{7}{8}$	834	54	Do	Lord St. Oswald.
$22\frac{3}{4}$	$8\frac{3}{4}$	9	Do	British Museum (R. McD. Hawker).
22 5	9	7	Suđan	Capt. R. J. Collins.
$22\frac{1}{2}$	9	$6\frac{1}{2}$	Do	G. C. Whitaker.
$\boldsymbol{22}_{2}^{1}$	$8\frac{3}{4}$	$6\frac{1}{2}$	Do	Capt. G. S. Cameron.
$22\frac{1}{2}$	$8\frac{1}{2}$	91	Dinder Valley	C. Bower Ismay.
$\cap{22}$	84	$7\frac{1}{2}$	Kordofan .	Walter Jones.
$22\frac{1}{2}$	9	$6\frac{1}{2}$	Sudan	Col. A. Colville.
223	$9\frac{3}{4}$	14	White Nile .	LieutGen. Sir B. T. Mahon.
$22\tfrac{1}{4}$	9	$5\frac{1}{2}$	Sudan	Capt. G. S. Nickerson.
$22\frac{1}{4}$	$8\frac{1}{2}$	6‡	White Nile .	Major H. N. Dunn.
$22\frac{1}{4}$	83	6	Do	Capt. A. H. Vivian.
$22\frac{1}{4}$	$8\frac{3}{4}$	$4\frac{1}{2}$	Do	E. M. Tabor.
221	$9\frac{3}{4}$	4	Lado	Q. Grogan.
$22\frac{1}{4}$	$9\frac{1}{2}$	$7\frac{1}{4}$	Sudan	Capt. E. H. Francis.
$22\frac{1}{4}$	9	5	Sobat District	Capt. J. A. Pollock.

TOPI 141



Head of Topi. From a specimen shot by the late Mr. A. H. Neumann.

C.—TOPI (D. corrigum jimela).

Korki, Galla.

Mangazi, Waganda.

Differs from *D. c. typicus* by the darker colour and absence of dark eye-stripe (see illustration). General colour dark reddish brown, with a silky bluish grey gloss; shoulders and thighs with blue-black patches; no dark stripe from the frontal blaze to the eye; under-parts bright cinnamon. Dark markings absent in young. Horns lyre-shaped, with the tips inclined backwards and inwards. A topi from the Upper Congo appears to connect *typicus* with *jimela*, having a vestige of the black eye-stripe. Height at shoulder, 48 to 50 inches. Weight, about 300 lbs.

Distribution.—Typically from the Juba district to British East Africa, thence to the Sabuki River, also near Lake Rudolf. The Uganda form apparently represents a distinct race of darker colour and larger stature.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.	Owner.
22 ¹ / ₂	81	54	Gallaland	. D. P. MacGillivray.
21	8	$6\frac{1}{2}$	North end of Lake Rudolf	. The late H. Andrew.
$-20\frac{1}{2}$	$8\frac{1}{2}$	$7\frac{1}{2}$	Uganda	. Dr. A. MacCarthy Morrogh.
191	$9\frac{1}{2}$	74	Do	. Lord Hindlip.
194	6 <u>5</u>	38	East Africa	. H. C. V. Hunter.
194	81/4	8	S. Albert Edward Nyanza	. E. S. Grogan.
194	81	61	East Africa	. A. de L. Long.
19‡	7 ₹	$6\frac{1}{4}$	Uganda	. Sir F. J. Jackson.
19	$7\frac{7}{8}$	8	Lake Rudolf	. A. E. Butter.
19	81	71	Uganda	. Major A. W. Jennings Bramly.
19	$6\frac{3}{4}$	$8\frac{1}{2}$	East Africa	. A. Louw.
9 19	71	5 ³ / ₄	Lado Enclave	. Major P. H. G. Powell-Cotton.
183	9	8	German East Africa	. Sir A. Sharpe.
183	$7\frac{1}{2}$	7	Do	. Hon. M. W. Elphinstone.
183	$6\frac{1}{2}$	4 5	?	I. N. Dracopoli.
185	85	8	Albert Edward Nyanza .	. Major P. H. G. Powell-Cotton.
$18\frac{1}{2}$	$7\frac{3}{4}$	$5\frac{3}{4}$	Tana Valley	. Major H. de Prée.
$18\frac{1}{2}$	83	$8\frac{1}{2}$	East Africa	. Sir Edmund G. Loder, Bart.
181	83	5‡	Do	. J. Carr Saunders.
$18\frac{1}{2}$	9	83	Do	. Capt. R. Meinertzhagen.
184	$8\frac{1}{2}$	8	Do	. B. Barr Smith.
184	81	$5\frac{1}{2}$	Jubaland	. L. Aylmer.
181	$8\frac{3}{4}$	81	Uganda	. E. Canaple.
5 18	$6\frac{1}{2}$	7 §	East Africa	. Duke of Medinaceli.

⁻ Owner's measurements.



Head of Bontebok.

The BONTEBOK (Damaliscus pygargus).

Distinguished from the preceding species of the genus by the lower portions of the limbs being mainly white, as well as (if one race of the korrigum be excluded) by a white blaze on the face, which is continuous from the horns to the nose. Height at shoulder, about 40 inches. Weight, about 200 lbs. Colour of fore part of back rufous fawn darkening into blackish on the back of ears, upper part of face, near the rump, flanks, shoulders, front of limbs, and tail-tuft; side of basal part of rump, upper half of tail, under-parts, and much of hind surface of limbs white.

The horns very nearly resemble those of the blesbok in shape, but their colour is much darker.

Distribution.—Cape Colony, south of the Orange River; now nearly exterminated. Although formerly occurring in tens of thousands on the Karus of Cape Colony and near Cape Agulhas, bontebok are reduced to a single herd preserved on some flats on the estate of Mr. Vander Byl, near Swellendam, in the south of Cape Colony.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.				Owner.		
168	$6\frac{3}{4}$	$9\frac{1}{8}$	3			British Museum.			
16‡	$6\frac{5}{8}$	8^{3}_{4}	Bredasdorp				A. C. Campbell.		
¹ 15 ⁷ / ₈	$6\frac{7}{8}$	8	Do.		٠.		British Museum (F. C. Selous).		
$15\frac{1}{2}$	$6\frac{1}{2}$	$8\frac{1}{2}$	Do.				Hon. Walter Rothschild.		
$15\frac{1}{2}$	61/2	7	Do.				W. A. Simpson Hinchliffe.		
$15\frac{1}{2}$	$6\frac{1}{2}$	93	Do.				A. C. Humbert.		
158	$6\frac{1}{8}$	81/8	Cape Colony				Sir Victor Brooke's Collection.		

¹ Weight, 200 lbs. Height, 411 at shoulder.

Length on front curve.		Tip to Tip.	Locality.		Owner.		
15	$6\frac{3}{4}$	$8\frac{1}{2}$	Cape Colony				F. C. Selous.
15	6	7	Do.				Sir Owen Philipps.
15	$6\frac{1}{4}$	$6\frac{3}{4}$	Bredasdorp				W. S. Curtis.
15	6‡	10	Do.				A. W. Guthrie.
♀ I4 ¹ / ₄	5 ³ / ₈	$7\frac{5}{8}$	Do.				Sir Abe Bailey.
♀ 141	$5\frac{1}{4}$	7	Do.				W. A. Simpson Hinchliffe.
1 Q 13½	51	7½	Do.				British Museum (F. C. Selous).

¹ Height at shoulder, 364.

OWNER'S MEASUREMENTS.

15 ³ / ₄	$6\frac{1}{2}$	7 1 6	Bredasdorp		Capt. W. Jardine.
152	61/2	5	Do.		A. Ohlsson.
$15\frac{1}{2}$	6 3	93	Do.		Mr. Justice Hopley.
151	61/8	9	Do.		P. C. Keytel.
15	61	7 §	Do.		Sir Abe Bailey.
15	6	$9\frac{1}{8}$	Do.		Dr. Albert von Stephani.
$14\frac{1}{2}$			Do.		South African Museum.
ұ 1 3	5	6 1	Do.		Abel Chapman.



Horns of Female and Male Blesbok.

The BLESBOK (Damaliscus albifrons).

Nunni, Bechuana.

Closely allied to the bontebok, but with the white blaze on the forehead divided by a brown line between the eyes, the absence of a white rump-patch, the wholly brown tail, and the yellowish rings of the horns; the horns themselves showing a greenish tinge.

Formerly to be numbered by hundreds of thousands, the beautiful blesbok had in the last sixty years grown very scarce, being fonly met with in small numbers on a few Boer farms in the Transvaal and the Orange River Colony; but since the Boer War they have increased enormously in numbers, and it is estimated that there are now over 50,000 on farms in the Orange River Colony. Seventy years ago blesboks often literally darkened the face of the land with

their innumerable legions. The north of the Cape Colony, Griqualand West, the Orange River Colony, and the plains of the Western and Southern Transvaal were the true home of this beautiful antelope. Gordon Cumming wrote as follows of the blesbok-country in 1848: "The plains exhibited one purple mass of graceful blesboks, which extended without a break as far as my eyes could strain; the depth of their vast legions covered a breadth of about six hundred yards."

Distribution.—Northern plains of Cape Colony, Orange River Colony, Transvaal, Griqualand West, and Bechuanaland.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.		Owner.
$18\frac{5}{8}$	$6\frac{1}{2}$	10	South Africa		H. G. Supple.
181	5 ³	121	Do		Sir Edmund G. Loder, Bart.
$17\frac{3}{4}$	$6\frac{1}{2}$	I 5 ½	Orange River Colony		Major B. Horsbrugh.
17‡	$6\frac{3}{4}$	7	Transvaal		Sir Abe Bailey.
171	7 1	$6\frac{1}{2}$	Orange River Colony		B. J. Fitzherbert.
174	6월	$8\frac{1}{2}$	Do.		Sir H. J. Goold-Adams.
17	$6\frac{3}{4}$	7	?		F. V. Worthington.
17	7	10	5		J. L. Drège.
$16\frac{3}{4}$	63	7	5		T. Stephenson.
163	$6\frac{1}{2}$	$9\frac{7}{8}$	Orange River Colony		Col. W. H. Sitwell.
$16\frac{1}{2}$	7	8	Do.	٠	Capt. H. D. Livingstone.
161	$6\frac{1}{2}$	$9\frac{1}{2}$	Do.		Capt. Sandilands.
$16\frac{1}{2}$	63	6	Do.	٠	Major C. F. Pinney.
$16\frac{1}{2}$	6‡	81	Do.		Hon. R. A. Ward.
$16\frac{1}{2}$	$6\frac{1}{2}$	41	Do.		Major I. Brooke.
16§	7	$6\frac{3}{4}$	Do.		A. E. Croker.
16‡	68	71	Do.		LieutCol. F. Fitzherbert.
16 1	63	74	Do.		Major G. F. Henry.
16‡	6	$6\frac{1}{2}$	5		Capt. R. Meinertzhagen.
16‡	7	9‡	?		British Museum.
16‡	63	9‡	Transvaal		Capt. C. G. Leslie.
16	63	7	?		Capt. E. W. S. Balfour.
16	63	83	Orange River Colony		Col. Lord Douglas Compton.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.		Owner.		
16	6 3	7	Orange River Colony		W. A. Simpson Hinchliffe.		
15 7 8	63	71	Do.		Sir Owen Philipps.		
¹ 15‡	$6\frac{1}{2}$	10	Driefontein, Orange Rive	r	British Museum (F. C. Selous).		
9 15	5‡				Capt. H. D. Livingstone.		



Head of Blesbok.

OWNER'S MEASUREMENTS.

18½			?		W. Colson.
18	$6\frac{1}{2}$	$10\frac{5}{8}$	Orange River Colony		F. R. N. Findlay.
173			Do.		C. S. Mann.
$17\frac{1}{2}$	$6\frac{1}{2}$	83	Transvaal		J. B. Wheelwright.
174	61	10_8^1	Orange River Colony		Capt. W. Jardine.
17		$8\frac{1}{2}$	}		Major W. Anstruther Gray.
17	63	$9\frac{1}{2}$;		J. C. Phillips.
16 ⁷ 8	7	7 ½	Orange River Colony		Count E. Hoyos.
♀ 16½	6‡	83	Do.		Sir Abe Bailey.
16	$6\frac{1}{2}$	$10\frac{1}{2}$	5		A. F. William.
I 5 ⁵ / ₈	$6\frac{1}{2}$	$7\frac{1}{4}$	Transvaal		H. A. Bryden.
♀ 14 7	4 ³ / ₄	81	Orange River Colony		P. C. Keytel.
		1	Weight, 180 lbs. Height as	t shoul	lder, 39½ inches.



Head of Sassaby. From a specimen shot in Mashonaland by Mr. F. C. Selous.

The SASSABY or BASTARD HARTEBEEST (Damaliscus lunatus).

Incolomo, Matabili.

Ingalowana, Basuto.

Inkweko, Masubia.

Inyundo, Makalaka.

Kaboli, Barotsi and Ngami.

Luchu, Masara.

M'tengo, Chilala and Chibisa.

Mzanci, Swazi.

Mzanzi, Zulu.

Unchuru, Makuba.

Horns short, starting obliquely outwards, with a single upward and backward lunate curve. Height at shoulder, from 3 feet 10 inches to 4 feet. General colour dark chestnut-red, with the face, shoulders, hips, upper portions of limbs, and tail-tuft black, and the region of the groin and margin of the ears white.

The sassaby has the reputation—in the opinion of all hunters who have tested its speed—of being the fleetest and most enduring antelope in South Africa; and were it not that, in common with the Cape hartebeest, it happens to be lacking in presence of mind, it would very seldom fall to the sportsman's rifle. A troop of sassaby may be often turned from its course, or brought to a halt, by firing over the heads of the fleeing animals. Or if the leader of the troop be wounded and turned out, the rest of the herd become confused and now and again offer easy shots.

Distribution.—South-East Africa, from north of the Orange River to the Zambesi, westward to Lake Ngami, and northwards to British Central Africa.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.			Owner.
$17\frac{1}{2}$	74	ΙΙ	N.E. Rhodesia			Sir Abe Bailey.
17½	$8\frac{1}{2}$	97	Do.			Earl of Kingston.
171	$8\frac{1}{8}$	10;	Do.			R. D. Waterhouse.
174	$7\frac{1}{2}$	$11\frac{1}{2}$	Do.			Col. C. F. Blane.
17	81	121	Do.			Col. A. Colville.
17	$7\frac{3}{4}$	101	Do.			P. M. Stewart.
164	74	12	Do.			W. A. Conduitt.
163	$7\frac{1}{4}$	111	Ngamiland .			Hon. G. Legge.
$16\frac{3}{4}$	81	104	N.E. Rhodesia			J. Turner.
165	75	134	Do			F. H. Melland.
16½	7 ½	14	Do.			R. Hayne.
$16\frac{1}{2}$	$6\frac{3}{4}$	131	Ngamiland .			A. G. Stigand.
$16\frac{1}{2}$	$7\frac{1}{2}$	I 2 1	N.E. Rhodesia			H. Cookson.
16½	7∄	103	Do.		٠	Capt. S. H. Christy.
$16\frac{1}{2}$	74	101	S. Rhodesia .			C. W. Adams.
161	74	$11{\textstyle{1\over2}}$	N.E. Rhodesia			Hon. W. Guinness.
16	$7\frac{3}{4}$	I I 1/4	?			A. Hugh Bainbridge.
16	75	$12\frac{3}{4}$	Chinama, B.C.A.			Hon. Walter Rothschild.
♀ 16	6‡	144	N.E. Rhodesia			Col. A. Colville.
15 ³ / ₄	7 ½	$15\frac{1}{2}$	Mashonaland .	٠		Sir John Willoughby, Bart.
154	$7\frac{1}{2}$	ΙΙ	N.E. Rhodesia			
15§	$7\frac{1}{2}$	$II\frac{3}{4}$	S. Africa .			Sir Edmund G. Loder, Bart.
I 5½	8	$II\frac{3}{4}$	N.E. Rhodesia			A. de L. Long.
152	81	101	3			W. A. Simpson Hinchliffe.
I 5½	8	13	N.E. Rhodesia			P. K. Glazebrook.
151		• • •	Mashonaland .			F. C. Selous.
151	7	148	5			F. T. Garbutt.
151	8:	134	?			W. F. Wailes-Fairbairn.
15‡	8	121	S.E. Africa .			
154	74	112	Rhodesia .			N. H. Barton.
			OWNER'S ME	ASU	RE	MENTS.
171	8	$14\frac{1}{2}$	N.E. Rhodesia			J. C. Phillips.



Frontlet and Horns of Brindled Gnu. From specimen in the British Museum, presented by the late Mr. Rowland Ward.

The BRINDLED GNU or BLUE WILDEBEEST (Connochætes taurinus).

Ee-vumba, Makalaka.
Ikokoni, Basuto.
Inkoni-koni, Amandebili.
Inkongoni, Swazi and Zulu.
Kokong, Barotsi and Batoka.

Minyumbwi, Batonga.
Munyumbwa, Chila.
Numbo, Masubia.
Nyamba, Chilala and Chisenga.
Unzozo, Makuba.

From their near relatives the hartebeests the gnus, or wildebeests, are distinguishable at a glance by their grotesque shape and smooth horns, as they also are by their habits. The long, broad, and massive head has a blunt and bristly muzzle, and tufts of coarse hair on the forehead and chin; the chin-tuft also extending on to the throat. The horns, which are placed on the crown of the head, are approximated at their bases, especially in old bulls, and are nearly smooth, more or less flattened at the bases, but almost cylindrical at the tips; the curvature being at first outwards, or outwards and downwards, and then bending upwards at the tips. An abundant mane of long hair clothes the back of the neck; and the tail is covered with longer and softer hairs, reaching considerably below the hocks. It is from the equine form of the tail that these animals were long popularly known by the name of "horned horse." The hoofs are characterised by their narrow form.

The blue wildebeest, as this species is called in S. Africa, is a large animal, standing from 4 feet 3 to 4 feet $4\frac{1}{2}$ inches at the shoulder. Its most characteristic features are the outward direction of the horns, which are but little expanded at the base and not unlike those of a buffalo; the almost uniformly black tail, the partially pendent mane, the presence of a fringe on the throat, the downward direction of the long hair on the face, and the absence of long hair on the lower part of the chest and between the fore-legs. The general colour varies from

grizzled roan to blackish slaty brown, with more or less distinct vertical dark stripes, most conspicuous in the lighter-coloured specimens, on the sides of the neck and fore-quarters. Typically, the fringe of hair on the throat, like the mane and tuft on the forehead, is black.

Distribution.—Formerly ranging from the north of the Orange River for a long distance up East Africa, the brindled gnu is now practically exterminated in the Orange River Colony and the adjacent districts south of the Limpopo. It survives in parts of Griqualand



Head of Brindled Gnu.

West and the Kalahari, as well as in British Bechuanaland, and is numerous in northern Zululand, as well as in Khama's country, the Orange River Colony, and Rhodesia, and thence northwards through Central and East Africa, and it also occurs in Mozambique. In spite of its clumsy and ungainly appearance, the brindled gnu is a rapid mover; and even when severely wounded will not unfrequently succeed in making good its escape from the mounted hunter.

It is generally distributed in South-East Central Africa, and north of the Zambesi is represented by the Nyasa race (*C. taurinus johnstoni*), distinguished by the white chevron on the face. Another race is noticed below.

A.—TYPICAL (C. taurinus typicus) and NYASA RACES.

Widest outside.	Widest inside.	Length on front curve.	Breadth of palm.	Tip to Tip.	Locality.	Owner.
$32\frac{1}{2}$	29	20	4	26½	P.E. Africa .	British Museum (late Mr. Rowland Ward). See illus-
	29	31	1131	15‡	Sabi Flats .	tration, p. 150. Dr. R. P. Mitchell.
32	28	24	4 ⁹	21	P.E. Africa .	J. C. Phillips,
	$28\frac{1}{2}$	215	51	178	Matabililand .	G. H. M. Banks.
31%	28	221	44	18_{4}^{3}	Nyasaland .	Capt. G. M. P. Hawthorne.
	$28\frac{1}{2}$	20%	5	16	Pungwe	C. C. Gouldsmith.
30%	$26\frac{3}{4}$	21	44	$2\mathrm{I}_{2}^{1}$	S.E. Africa .	American National Collection.
30g	$26\frac{3}{8}$	$23\frac{1}{2}$	5 1	163	?	Sir Abe Bailey.
$30\frac{1}{2}$	$26\frac{1}{2}$	$23\frac{1}{2}$	$6\frac{1}{2}$	18‡	S.E. Africa .	F. C. Selous.
$30\frac{1}{2}$	26 ³ / ₄	$24\frac{1}{4}$	$4\frac{1}{2}$	18	P.E. Africa .	Capt. R. A. McClymont.
30½	26	$22\frac{1}{4}$	$4\frac{1}{2}$	$18\frac{5}{1}$	Do	Col. A. Colville.
304	26	22	$4\frac{1}{2}$	171	Do	W. A. Simpson Hinchliffe.
• • •	$26\frac{1}{2}$	211	45	$20\frac{1}{2}$	Matabililand .	Major R. Hayes-Sadler.
$30\frac{1}{4}$	$26\frac{1}{4}$	$19\frac{3}{4}$	5	$2I\frac{1}{2}$?	B. Nicolson.
30	25章	$2I\frac{1}{2}$	$4\frac{3}{4}$	191	Pungwe	Dr. S. Martin.
30	26.}	$21\frac{1}{2}$	$4\frac{1}{2}$	18‡	Do	Hon. Walter Rothschild.
30	26	21	$4\frac{1}{2}$	19‡	Do	Count R. Coudenhove-
	$25\frac{1}{2}$	22	$4\frac{1}{4}$	17	S. Africa	Kalergi. G. Richards.
2 9 $\frac{3}{4}$	$25\frac{1}{2}$	22	$4\frac{3}{4}$	$16\frac{1}{2}$	G.E. Africa .	J. R. Rolls Richardson.
2 94	$24\frac{1}{4}$	2 45	41	183	S.E. Africa .	H. W. Elliott.
$29\frac{3}{4}$	26	22	4	183	?	British Museum (Sir A.
2 9½	25	194	5	201	}	Smith). G. Bateman.
$29\frac{1}{2}$	$25\frac{1}{4}$	201	5	20	Zululand	MajGen. Sir David Bruce.
$29\frac{1}{2}$	$25\frac{1}{2}$	211	41	184		Sir Owen Philipps.
29	26	19	4	211	N.E. Rhodesia	H. Cookson.
29	$25\frac{1}{2}$		33	19	Pungwe	H.R.H. Prince Pedro
29	$24\frac{3}{4}$	201	41	163	?	d'Orléans et de Braganza. A. Hugh Bainbridge.

OWNER'S MEASUREMENTS.

33 2	283	 $6\frac{1}{2}$	24	Sabi Flats	B. Secretan.
304	27	 4	20 ³ / ₄	S.E. Africa	H. M. von Archer.

¹ Circumference.



Head of White Bearded Gnu.

B.—NYASA RACE.

Widest outside.	Widest inside.	Length on front curve.	Breadth of palm.	Tip to Tip.	Locality.	Owner.
30	25 ² / ₁	24½	$4\frac{1}{2}$	183	Nyasaland .	Capt. R. Meinertzhagen.
29 ₁ ¹ 6	25	$20\frac{3}{4}$	5	16	Do	A. R. Andrew.
29	241	21	$4\frac{3}{4}$	14	Do	T. Mills.
26	22	13	5	19	N.W. Rhodesia	G. Crompton.
26	2I ³ / ₄	131	41/4	17#	Nyasaland .	Sir Alfred Sharpe.
♀ 25 ⁷ / ₈	$21\frac{1}{8}$	18_{8}^{7}	4	128	Mashonaland .	J. Ff. Darling.
25 ⁸ / ₄	2I ½	$18\frac{3}{4}$	$4\frac{1}{2}$	$13\frac{1}{2}$	Nyasaland .	R. H. Storey.
$25\frac{1}{2}$	215	$17\frac{1}{2}$	4	15	Barotsiland .	R. T. Coryndon.



Skull and Horns of White-bearded Gnu.

C.—KILIMANJARO or WHITE-BEARDED RACE (C. taurinus albojubatus).

Nyumbu, Swahili. Lavagadli, Somali. Engat, Masai.

A race distinguished by its slightly paler colouring, and the yellowish white throat-fringe, a few whitish hairs being also mingled with the mane. The form of the widest part of the front of the horns is somewhat different from the corresponding region in the typical race. Weight, about 550 lbs.

Distribution.—East Africa—Athi plains, Ukambani, north of Kilimanjaro.

Widest outside.	Widest inside.	Length on front curve.	Breadth of palm.	Tip to Tip.	Locality.		Owner.
$29\frac{1}{2}$	26‡	$24\frac{1}{4}$	$4\frac{1}{2}$	183	East Africa	٠	W. L. Spencer Churchill.
29_{2}^{1}	$25\frac{1}{2}$	24	51	168	Do.		Sir Edmund G. Loder, Bart.
29.]	25#	$2I\frac{1}{2}$	$4\frac{3}{4}$	$17\tfrac{1}{2}$	Do.		G. L. Harrison.
29	25	$25\frac{3}{4}$	443	163	Do.		Mrs. J. E. R. Oldfield.
29	244	21	43	18	Do.		H. C. Phipps.
283	25	$2I_{2}^{1}$	42	183	Do.		C. Bulpett.
28%	$25\frac{1}{4}$	21	$4\frac{3}{4}$	18	Do.		W. Sewall.
$28\frac{1}{2}$	25	21	$4\frac{1}{2}$	172	Do.	,	The late G. G. Longden.
28‡	242	21	5	183	Do.		Abel Chapman.

Widest outside.	Widest inside.	Length on front curve.	Breadth of palm.	Tip to Tip.	Locality.		Owner.
281	$24\frac{1}{2}$	22	5	16	East Africa		J. H. Penruddock.
281	25	22	$4\frac{1}{2}$	19	Do.		W. Neilson.
28 1	$24\frac{1}{2}$	$22\tfrac{1}{2}$	$4\frac{1}{2}$	15	Do.		R. H. R. Brocklebank.
281	$24\frac{1}{2}$	21	4 ³ / ₄	163	Do.		Capt. R. Meinertzhagen.
281	24	2 I $\frac{1}{2}$	$4\frac{3}{4}$	16‡	Do.		R. W. McKergow.
28	$24\frac{1}{2}$	$24\frac{3}{4}$	43	18	Do.		Dr. A. E. Herz.
28	$23\frac{1}{2}$	20	$4\frac{1}{2}$	$18\frac{3}{4}$	Do.		Capt. V. C. de Crespigny.
28	25	24	41	181	Do.		Capt. G. F. Phillips.
28	$24\frac{1}{2}$	224	5	19	Do.		G. W. C. Drexel.
27 ³ / ₄	241	21	5	183	Do.		C. B. C. Storey.
27 ³ / ₄	241	$22\frac{3}{4}$	$4\frac{1}{4}$	191	Do.		J. Anstruther.
273	234	$21\frac{3}{4}$	$5\frac{1}{2}$	17‡	Do.		Comdr. H. L. P. Herd, R.N.
27 3	24	$23\frac{1}{2}$	$4\frac{3}{4}$	15‡	Do.		Col. D. M. Lumsden.
27 3	$25\frac{1}{2}$	$22\frac{1}{4}$	$5\frac{3}{4}$	$14\frac{1}{2}$	Do.		Capt. T. H. Rivers Bulkeley.
273	$23\frac{1}{2}$	$25\frac{1}{4}$	$4\frac{3}{4}$	$16\frac{1}{2}$	Do.		W. N. McMillan.
$27\frac{3}{4}$	24	$25\frac{1}{4}$	$4\frac{1}{2}$	141	Do.		F. C. Selous.
$27\frac{3}{4}$	25	$23\frac{1}{2}$	$4\frac{3}{8}$	21	Do.		G. C. Slacke.
$27\frac{3}{4}$	$23\frac{3}{4}$	23	$5\frac{1}{2}$	23	Do.	•	W. H. Levy.
$27\frac{1}{2}$	$23\frac{3}{4}$	$2I\frac{1}{2}$	$4\frac{3}{4}$	154	Do.		C. Craig.
$27\frac{1}{2}$	$23\frac{3}{4}$	$15\frac{1}{2}$	4 3	20 ³ / _S	Do.	٠	T. D. M. Cardeza.
$27\frac{1}{2}$	233	21	$4\frac{1}{2}$	$16\frac{3}{4}$	Do.		Master of Belhaven.
$27\frac{1}{2}$		22	6	$15\frac{1}{2}$	Do.		Lord Delamere.
$27\frac{1}{2}$	24	183	4 ¹ / ₄	184	Do.		Dr. Clifford Brookes.
$27\frac{1}{2}$	24	$24\frac{1}{2}$	41	$16\frac{1}{2}$	Do.		S. E. Milsom.
27‡	234	181	$4\frac{5}{8}$	19	Do.		Lord Alex. Thynne.
271	23	21	$4\frac{1}{4}$	142	Do.		A. de Rothschild.
27 1	$22\frac{3}{4}$	23	$5\frac{1}{2}$	15	Do.		Major J. A. Hannyngton.
27‡	$23\frac{1}{4}$	21	$4\frac{1}{2}$	163	Do.		Percy C. Madeira.
$27\frac{1}{4}$	$23\frac{1}{2}$	201	$4\frac{3}{4}$	$21\tfrac{1}{2}$	Do.		C. Frick.
271	24	23	$4\frac{1}{2}$	181	Do.		LtCol. T. A. Colfox.
♀ 22¾	191	165	31	I23	Do.		R. E. Wemyss.



Head of Gnu.

The GNU or BLACK WILDEBEEST (Connochætes gnu).

This southern species is the true gnu, which was formerly known to the Hottentots by that name, although, by the colonists, it is termed the black wildebeest. Its inferior size (height at shoulder, about 3 ft. 10 ins.), the downward curvature of the horns at starting and their great expansion at the base, the white tail, the abundant fringe of long hair on the lower part of the chest and between the fore-legs, the upright mane, and the crest of hair on the face, distinguish it from the brindled gnu. The general colour is uniform deep umber-brown, passing into black. Females are much smaller than males; and have the horns more slender and less expanded at the base.

Distribution.—The northern range of this species was approximately limited by the Vaal, or northern branch of the Orange River. At the time of the Boer War this gnu was represented by herds of a few hundred in the Orange River Colony and on Mr. C. D. Rudd's estate near Cape Town. On the plains of the latter country, as well as on the Karus of Cape Colony, it was formerly found in vast herds, generally in company with quaggas. Fierce and treacherous in disposition, it was especially characterised by its habit of indulging in grotesque capers and frolics on the approach of strangers.

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Length on	Breadth	Tip to Tip.	Locality.	Owner.
front curve.	of palm.	14½	Orange River Colony	Sir Edmund G. Loder, Bart.
251	7 ± 7 §	211	Do.	Major P. A. Cox.
	6 <u>3</u>	151	Do.	A. Payne-Gallwey.
25	8	16	Do.	W. A. Simpson Hinchliffe.
24½		18	Do.	Capt. C. Staveley.
24 ½	7 ¹ / ₄		Do.	Major C. D. Vaughan.
$24\frac{1}{2}$	8	174		,
241	7½	195	Do.	G. B. Plumptre.
24	81/2	15	Do.	Hon. Walter Rothschild.
24	$9\frac{1}{2}$	15½	Do.	Major C. L. Graham.
24	$S_{\frac{1}{4}}$	131	Do.	C. D. Rudd.
24	8	14	Do.	Col. Lord Douglas Compton.
232	8	$16\frac{1}{2}$	Do.	E. McClellan.
$23\frac{1}{2}$	71	I 5½	Do.	A. F. William.
23	7 ½	II $\frac{1}{2}$	Do.	Capt. V. C. de Crespigny.
23	$7\frac{1}{2}$	15	Do.	Bloemfontein Museum.
23	8	$I2\frac{1}{2}$	Do.	R. T. Coryndon.
23	$7\frac{1}{4}$	I 3½	Do.	Major B. Horsbrugh.
23	73	14 ³ / ₄	Do.	B. J. Fitzherbert.
$22\frac{3}{4}$	74	15	Do.	F. C. Selous.
22 3	81/2	16‡	Do.	Capt. R. Meinertzhagen.
22 ³ / ₄	7 5	$12\frac{1}{2}$	Do.	Sir H. J. Goold-Adams.
♀ 193	1 I 3 ½	103	Do.	Dr. W. P. Y. Bainbrigge.

OWNER'S MEASUREMENTS.

30 8	$^{1}22\frac{1}{2}$	14	Kalahari	Dr. F. H. H. Guillemard.
30	IO^1_2	178	?	Mr. Justice Hopley.
$29\frac{1}{2}$	63	7	Orange River Colony	Sir Abe Bailey.
27 ⁷ / ₈	7	1.1	Do.	Count E. Hoyos.
$27\frac{1}{2}$	10	$\mathbf{H}\mathbf{I}_{2}^{1}$	Do.	C. S. Mann.
26 <u>3</u>	7	14	?	Major W. Anstruther Gray.
26 1	81	15	Cape Colony	Grahamstown Museum.

¹ Circumference.



Skull and Horns of Abyssinian Duiker shot by Mr. J. G. Millais.

The DUIKERBOK (Cephalophus grimmi).

Puti, Bechuana. Impunzi, Matabili. Gwapi, Chinyanja. Nagi, M'Kua. Impungi, Swazi and Zulu.
Imputi, Basuto.
Gudda, Hausa.
Mpewo, Waganda.

Nakasha, Chila.

The Cape duiker, or 'diver,' is a southern representative of an extensive group of, mostly small, antelopes confined to Africa. In all of these the muzzle is naked; face-glands of a more or less elongated form are present, as are lateral hoofs; the tail is of medium length, the knees have no tufts of long hair, and the females are provided with four teats. The horns, which are short and straight, are generally present in both sexes, but are smoother and more slender in the does than in the bucks; while in both sexes they are more or less hidden by a tuft of long hairs growing from the crown of the head. The upper cheek-teeth have low crowns, with square grinding surfaces, and the face-glands are arranged to form a bare line of pores on each side of the muzzle. The present species—the true duikerbok—is characterised by the horns (absent in the females) inclining upwards at an obtuse angle to the plane of the profile of the nose. Other features of the sub-group are the long and pointed ears, the general vellowish fawn colour, devoid of dark markings, except a brown nosestreak. The Cape duiker, which measures from 23 to 26 inches at the shoulder, ranges on the west as far north as Angola, and on the east, in the shape of local races, to the Shiré Highlands, north of which it is

replaced by shorter-eared races akin to the Abyssinian *C. g. abyssinicus*. Weight, about 30 lbs. Throughout its habitat the duikerbok is to be met with wherever sufficient covert exists; and its furtive, squatting, dodging habits are most aptly indicated by its name. Occurring either singly or in pairs, it strictly avoids both open plains and steep, rocky mountains.

A.—CAPE AND ALLIED RACES.

Length on front.	Circum- ference.	Tip to Tip.	Locality.	Owner.
6 <u>8</u> ·	21	2 1 8	Transvaal	. Dr. W. Gibson.
61	2 ³ / ₈	31	Do	. Sir Owen Philipps.
5 ⁷ / ₈	13	$2\frac{1}{2}$	South Africa .	. W. A. Simpson Hinchliffe.
5≟	2	31/8	Do	. R. McClellan.
5§	$2\tfrac{1}{1\cdot 6}$	$2\frac{3}{4}$	N.W. Rhodesia .	. Guy Nickalls.
5½	$2\frac{1}{8}$	2_{S}^{7}	Selinya, Khama's	F. C. Selous.
5 ¹ / ₂	21	28	country Cape Colony	. Mr. Justice Hopley.
$5\frac{1}{2}$	2	$2\frac{1}{4}$	Delagoa Bay .	. F. W. Parish.
51	$2\frac{1}{4}$	$I\frac{1}{2}$	Zululand	. Major L. O. Williams.
5‡	2 1	18	N.W. Rhodesia .	. Earl of Kingston.
51	$2\frac{1}{4}$	375	Do	. Col. Lord Douglas Compton.
51	$2\frac{1}{8}$	2	Do	. J. C. Phillips.
5 ¹ 8	2	3	S. Rhodesia .	. Capt. N. Livingstone Learmonth.
5 ¹ / ₈	$2\frac{1}{8}$	3	S.W. Transvaal .	. W. F. Tuthill.
5½	2	23	Transvaal	. H. T. and A. H. Glynn.
5 1 8	2 1 6	28	Cape Flats	. Capt. W. Jardine.
5	2	13	South Africa .	. J. J. B. Saffery.
5	$2\frac{1}{4}$	$2\frac{1}{4}$	Do	. G. Richards.
5	2 ³ _S	$2\frac{1}{4}$	Do	. G. B. Plumptre.
5	21	$2\frac{1}{2}$	Do	. F. C. Selous.
5	$2\frac{1}{4}$	$2\frac{1}{4}$	Angola	. C. H. Pemberton.
5	$2\frac{1}{4}$	2 ¹ / ₂	?	C. C. Bowring.
5	21	25	Ngamiland	. Mervyn G. Williams.
5	$2\frac{1}{2}$	3 ¹ / ₄	Northern Rhodesia	. F. Smitheman.
5	21	I ½	Do.	. R. Beaumont.
5	2 ¹ / _±	2 ³ 1	Nyasaland	. Dr. J. O. Shircore.

OWNER'S MEASUREMENTS.

Length on front.	Circum- ference.	Tip to Tip.	Loc	ality.		Owner.
$6\frac{1}{2}$			Angola			E. P. Cooper.
63	2.1	28	S. Africa			C. S. Mann.
6	25	34	Do.			Col. J. J. Harrison.
6	2 ³ 8	24	Do.			H. Henderson.
5 -	24	21	Do.			Major H. Chamney.
55	2 1 2	$2\frac{1}{2}$	Do.		٠	Sir Abe Bailey.
54		$2\frac{1}{2}$	Do.			J. Whitaker.
∓ 4 ⁸	28	23		3		P. C. Keytel.

B.—ABYSSINIAN (C. grimmi abyssinicus) AND ALLIED®RACES. Midaku, Abyssinian.

Smaller than the Cape duiker, and agreeing in size and in the relative shortness of the ears with the crowned duiker (C. g. coronatus), this race differs from the latter by the general colour of the fur being greyish brown instead of bright yellow. Allied but larger races occur in the Kenia and Zomba districts of Eastern Africa, respectively known as C. g. hindei and C. g. shirensis.

Distribution.—The highlands of Abyssinia: the East African specimens mentioned below belong to the allied races.

Length on front.	Circum- ference.	Tip to Tip.	Loca	ality.		Owner.
51/4	2 g	2	E. Africa			A. de L. Long.
43	21	• • •	Do.			Abel Chapman.
4 5	2 1	24	Do.			E. B. Horne.
45	28	I -1	Do.		.•	Viscount Ennismore.
$4\frac{1}{2}$	2.	$2\frac{3}{8}$	Do.			W. H. Lindsay.
4 ½	2	$1\tfrac{1}{2}$	Do.			Gerard Buxton.
$4\frac{1}{2}$	2.1	23	Do.			R. F. C. Tompson.
42	20	2 ¹ / ₈	Do.			J. F. Franks.
44	23	2.}	Do.			J. G. Millais.
4 1	2	2	Sudan			Major P. M. Dove.]
4.1	2.1	3	Abyssinia			D. P. MacGillivray.
41	21/4	Γ_4^3	Do			W. F. Whitehouse.
41/4	25	7	Bahr-el-Gh	azal		F. C. Selous.

Length on front.	Circum- ference.	Tip to Tip.	Loca	dity.		Owner.
4 ¹ 8	2	2	Gallaland			Lord Hindlip.
$4\frac{1}{8}$	$2\frac{1}{8}$	18	Abyssinia			Major P. H. G. Powell-Cotton.
$4\frac{1}{8}$	2	$1\frac{3}{4}$	Do.			F. Gillett.
4 ¹ / ₈	2 3 6	I	E. Africa			E. H. Litchfield.
48	21	$2\frac{3}{8}$	Do.			K. V. Painter.
48	2	$2\frac{1}{4}$	Do.			Sir Richard Dane.
$4\frac{1}{8}$	$2\frac{3}{8}$	I $\frac{1}{2}$	Do.		٠	Capt. C. J. Murray.
$4\frac{1}{8}$	25	I 1/4	Do.			Sir J. Hume Campbell, Bart.
$4\frac{1}{8}$	2	2	Sudan.			Col. A. Colville.

C.—WESTERN RACES (C. grimmi coronatus and C. g. campbelliæ).

A small short-eared race standing about 15 or 16 inches in height, of a bright yellowish fawn colour, showing a faint tinge of black; C. g. campbelliæ is an allied West African race, with much more dark speckling in the coat, to which most or all of the following specimens probably belong.

Distribution.—West Africa.

Length on front.	Circum- ference.	Tip to Tip.	Locality.	Owner,
$4\frac{15}{16}$	$2\frac{1}{4}$	$2\frac{5}{8}$	N. Nigeria	S. M. Grier.
4 ⁵ / ₈	$2\frac{1}{4}$		Do	Capt. G. C. Kelly.
$4\frac{1}{2}$	$2\frac{1}{2}$	$\frac{7}{8}$	Do	Major E. M. Baker.
$4\frac{1}{2}$	21/4	2 ⁷ / ₈	Nigeria	Major J. A. Burdon.
$4\frac{1}{2}$	$2\frac{\Omega}{4}$	13 4	Do	Major J. B. Cockburn.
48	21	$2\frac{1}{2}$	Do	Capt. W. M. Fowler.
4 ³ / ₈	$2\frac{1}{4}$	I ½	Do	G. W. Webster.
$4\frac{3}{8}$	$2\frac{1}{4}$	I $\frac{7}{8}$	Gold Coast	. Capt. B. E. Murray.
$4\frac{3}{16}$	$2\frac{1}{2}$	13/8	Okutu, S. Borgu .	Major B. R. M. Glossop.
416	$2\frac{1}{8}$	$2\frac{1}{2}$	Nigeria	C. Bryant.
4	2 ³ ₈	$3\frac{1}{2}$	Do	Capt. F. Call.
4	2	18	Lokoja, Niger .	Capt. T. N. Puckle.
$2\frac{1}{1}\frac{5}{6}$	I 7/8	I 7/8	Portuguese Guinea	Major P. H. G. Powell-Cotton.

THE BLACK DUIKER (Cephalophus niger).

Distribution.—Liberia to the Gold Coast.

Length on front.	Circum- ference.	Tip to Tip.	Locality.	Owner.
$3\frac{1}{4}$	2 ½	2	?	J. C. Phillips.
$2\frac{1}{2}$	$2\frac{1}{2}$	I &	Gold Coast .	Capt. G. Wolfe-Murray.



Head of Blue Buck.

The BLUE DUIKER or BLUE BUCK (Cephalophus monticola).

Ipiti, Zulu.

In the great majority of duikers, that is to say all except those included in the group mentioned above, the horns, which are generally present in both sexes, slope backwards either in or just below the line of the profile of the nose. The present species is included in a subgroup characterised by the smoky-brown or blackish colouring, and is especially distinguished by the rufous legs and uniformly coloured rump, the height at the shoulder being 13 inches. Weight, about 8 lbs. clean.

Distribution.—Southern Africa, from the wooded districts of Cape Colony northwards to Benguela on the west, and Nyasaland on the east.

A.—TYPICAL RACE.

Length on front.	Circum- ference.	Tip to Tip.	Locality.	Owner.
$2\frac{1}{2}$	13	$I\frac{1}{2}$	Tushila Plain, B.C.A.	Hon. Walter Rothschild.
$2\frac{1}{8}$	$1\frac{3}{4}$	7 /8	5	Sir Owen Philipps.
216	$1\frac{1}{2}$	I $\frac{3}{4}$	Nyasaland	D. D. Lyell.
2	$1\frac{1}{2}$	$I\frac{1}{2}$	Pondoland	Sir Edmund G. Loder, Bart.
2		13	Natal	F. C. Selous.
2	15	$1\frac{3}{4}$	Benguela	G. W. Penrice.
2	13	I 1/4	N. Rhodesia .	L. de Fries.
2	I 🖁	$1\frac{1}{2}$?	Col. E. St. C. Pemberton.
917	13	14	Nyasaland	D. D. Lyell.
15	15	18	Benguela	. Hon. Walter Rothschild.

B.—SUDANI RACE (C. monticola æquatorialis).

Length on front.	Circum- ference.	Tip to Tip.	Loc	ality.		Owner.
$1\frac{1}{2}$	18	$1\frac{1}{2}$	Sudan.			Capt. C. Leigh.
I 1/8		I	Uganda			Capt. H. S. Toppin.

MAXWELL'S DUIKER (Cephalophus maxwelli).

This species belongs to the sub-group characterised by the smoky-brown or blackish colour. In size it is small (height at shoulder, about 14 inches). The face is coloured like the back; the limbs, like the body, are greyish brown; and the rump is not parti-coloured. It was first brought to England by Col. C. Maxwell, and described by Col. Hamilton Smith in 1827.

Distribution.—West Africa, from Gambia to the Gold Coast.

Length on front.	Circum- ference.	Tip to Tip.	Locality.	Owner.	
$2\frac{1}{2}$	$2\frac{3}{4}$	$I\frac{3}{3}$	Portuguese Guinea		Viscount de Thiene.
21/4	21	2 ¹ / ₈	Do.		M. V. Hay.
-28		2 5	Sierra Leone .		L. J. Jones.
21	2 ½	I 7/8	Ashanti		D. H. M. Boyle.
21/8	$2\frac{1}{4}$	2	S. Nigeria		Major E. M. Baker.
I 5	21	2	Fanti		Hon. Walter Rothschild.
♀15	13	I 176	S. Nigeria		Major E. M. Baker.

The RED or NATAL DUIKER (Cephalophus natalensis).

Rooi-Bosch-bokje, Boer. Msumbi, Swazis and Malonga.

Mkumbi, Zulu. Izikupu, Basuto.

Chisimbi, Lower Zambesi.

This duiker is classed in another sub-group of small or mediumsized species characterised by the fulvous, rufous, or chestnut groundcolour; and is specially distinguished by its small size (height at shoulder, 18 to 19 inches) and completely uniform colouring, having no dark markings on either the face or body. The horns are short and thick.

Distribution.—Natal, Transvaal, and Mashonaland (including all the forest and bush country of the East Coast), and perhaps the Lualwa River district of the Mozambique Province.

Length on front.	Circum- ference.	Tip to Tip.		Loc	ality.		Owner.
-3 ⁷ / ₈	$2\frac{3}{4}$	2			?		Sir Abe Bailey.
· -35	2 ³ / ₄	\mathbf{I}_{4}^{3}			?		Major H. Chamney.
-3 5	31	34	Natal	• 1			C. S. Mann.
38	$2\frac{1}{2}$	2 ¹ / ₈	Sabi Flats				Col. J. J. Harrison.
31	2 <u>5</u>	2			?		S. Butcher.

⁻ Owner's measurements.

Length on front.	Circum- ference. T	ip to Tip.	Loca	ality.				Owner.
3	25 8	$I_{\frac{1}{4}}$	3	?				Col. E. St. C. Pemberton.
3	2 ⁵ ₈	15	Natal .					Sir Owen Philipps.
3	• • •	$\mathbf{I}_{\mathbf{S}}^{\mathbf{T}}$?				J. H. Leche.
13	2_{\pm}^{3}		N. Makualand					Hon. Walter Rothschild.
- ♀ 2 ³ / ₄	1 7/8	I	Foot-hills of Kal	hlam	ba			F. Vaughan Kirby.
♀15		I	Near Durban					F. C. Selous.
	- Own	er's measu	rements.		1 Dete	rminat	ion	provisional.

The BAY DUIKER (Cephalophus dorsalis).

From the last species the bay duiker, together with some allied West African forms, differs by the presence of a black stripe running along the back and continued to the tail. As a species, its special characters are the dark colour of the buttocks, and the evenly haired tail, which shows no sign of a tuft, and is white below.

Distribution.—West Africa, from Sierra Leone to the Gold Coast, being replaced in the Cameruns by C. castaneus.

Length on front.	Girth.	Tip to Tip.	Locality.	Owner.
$3\frac{1}{16}$	$2\frac{1}{8}$	2	West Africa	Hon. Walter Rothschild.
$3\frac{1}{2}$	$3\frac{1}{2}$	38	Cameruns (C. castaneus).	C. S. Mann.
2 7 5	$2\frac{1}{4}$	I 1/4	Sierra Leone	Major-Gen. P. S. Wilkinson.
$2\frac{1}{2}$	I 3/4	I 1 1 6	S. Nigeria	Major E. M. Baker.
$2\frac{1}{2}$	$2\frac{1}{2}$	15	Portuguese Guinea	C. S. Burnett.

${\bf BANDED\ DUIKER\ or\ ZEBRA\text{-}ANTELOPE\ (Cephalophus\ doriæ)}.$

The tiger-like transverse black bands on the orange ground of the back suffice to distinguish at a glance this pretty little duiker from all its kindred.

Distribution.—The interior of the West Coast of Africa from Liberia to Sierra Leone, where it is commonly known as the mountain deer.

Length on front.	Circum- ference.	Tip to Tip.	Locality.	. Owner.		
I 🖁	•••	I	Liberia	British Museum (Dr.	J. Büttikofer).	
15	I]	I 1	Do	. Hon. Walter Rothsch	nild.	



Head of Yellow-backed Duiker.

YELLOW-BACKED DUIKER (Cephalophus sylvicultor).

This species, which is the type of the genus, is distinguished from most other duikers by its large size, coupled with its blackish colouring, and the presence of a yellowish crest on the back and a similarly coloured longitudinal patch on the rump. Height at shoulder, 34 inches. The N.E. Rhodesian form of the species has been named *C. coxi*, and the Ituri yellow-backed duiker has also received a name, but neither appears entitled to rank even as a distinct race.

Distribution.—The West Coast of Africa from Liberia to Angola, and thence eastwards through the forest-zone.

Length on front.	Circum- ference.	Tip to Tip.	Locality.			Owner.
7 2	$4\frac{3}{4}$	$4\frac{1}{8}$	N.E. Rhodesia			E. R. D. Hall.
7	$3\frac{1}{2}$		Sierra Leone			Major C. E. Palmer.
$-6\frac{7}{8}$	3	3	N.E. Rhodesia			Dr. Albert von Stephani.
6^{3}_{4}	34	42	Fanti			British Museum.
65	3‡	38	Luapulu River, Rhodesia	I	V.E.	G. M. E. Leyer.
$6\frac{1}{2}$	3_8^3	5	Sierra Leone			W. St. J. Oswell.
6‡	31/2		Ashanti .			C. Beddington.
63						C. S. Mann.
♀ 5₹	3 ¹ / ₂	38	Congo .			Do,
5½	38	4 s	Gabun .			Sir Edmund G. Loder, Bart.
5	34	41	Angola .			Hon. Walter Rothschild.
5	34	4 ¹ / ₈	Do			G. W. Penrice.
5	3		N.E. Rhodesia			H. Cookson.
5	3	$2\frac{7}{8}$	Do.			Earl of Kingston.

⁻ Owner's measurements.

HARVEY'S DUIKER (Cephalophus harveyi).

This East African species is in size and its dark chestnut-red colour very similar to the Natal duiker, but with a dark brown or blackish blaze on the face, and the horns thick at the base and rough. *C. isaaci* is an allied species.

Distribution.—East Africa.

Length on front.	Circum- ference.	Tip to Tip.	. Loc	ality.			Owner.
4 ₁ ¹ ε	$2\frac{7}{8}$	$2\frac{7}{8}$	Kikuyu Fore	est .			Sir Edmund G. Loder, Bart.
$-3\frac{7}{8}$	2		East Africa				Major H. W. A. Christie.
1 3 5	3 ¹ / ₄		Mau Forest,	East	Africa		Hon. Walter Rothschild.
35	2 7 8	$2\frac{1}{2}$.	I	Oo.			Sir F. J. Jackson.
$3\frac{1}{2}$	$2\frac{3}{4}$	$2\frac{3}{8}$	East Africa			٠	The late Rear - Admiral R. A. J. Montgomerie.
3 ¹ / ₄	35	2 ³ / ₈	Do.				Sir J. Hume Campbell, Bart.
- Owner's measurements.						1 Ce	ephalophus isaaci.

LEOPOLD'S DUIKER (Cephalophus leopoldi).

Distribution.—Ituri Forest.

Length on front.	Circum- ference.	Tip to Tip.	Locality.				Owner.	
$3\frac{1}{2}$	$3\frac{1}{3}$	17/8	Uganda				Capt. H. S. Toppin.	

RED-FLANKED DUIKER (Cephalophus rufilatus).

Gudda-n Kurimi, Hausa.

This species stands about 14 inches, and is orange-rufous in colour, with the front of the face, the dorsal stripe, and the tail and limbs bluish grey, the crest black, the under-parts paler, and the throat whitish.

Distribution.—West Africa, from Senegambia to Nigeria.

Circum- ference.	Tip to Tip.	Locality.		Owner.
$3\frac{1}{2}$	13	N. Nigeria .		H. de C. Mathews.
$2\frac{1}{4}$	2	Do		R. M. Blackwood.
3	2 ³ / ₈	Do		B. C. B. Tower.
$2\frac{7}{8}$	25/8	Gambaga, Gold C	oast	British Museum (Capt. W. Giffard).
$2\frac{3}{4}$	I ½	Nigeria		Capt. C. C. West.
$3\frac{1}{8}$	15	Portuguese Guinea	ι.	Major P. H. G. Powell-Cotton.
$2\frac{1}{2}$	2	Nigeria		Capt. P. A. Clive.
2 7/5	$I\frac{1}{2}$	Okutu, S. Borgu		Major B. R. M. Glossop.
$2\frac{1}{2}$	23	Lagos		Capt. W. A. Ross.
$2\frac{1}{2}$	$I_{.j}^{\ 1}$	N. Nigeria .		G. W. Webster.
2 1	13	Lokoja, Nigeria		Major-Gen. P. S. Wilkinson.
$2\frac{1}{2}$	13	Nigeria		Capt. H. V. Venables Kyrke.
21/2	I 1/2	Do		W. D. Downes.
25 5	1.]	Do		Dr. M. W. Manuk.
	I	Ashanti		Capt. B. E. Murray.
	ference. 3½ 2¼ 3 2¼ 3 2½ 4 3 2½ 2½ 2½ 2½ 2½ 2½ 2½ 2½ 2½ 2½ 2½ 2½ 2½	ference. The folians $3\frac{1}{2}$ $1\frac{3}{8}$ $2\frac{1}{4}$ 2 3 $2\frac{5}{8}$ $2\frac{5}{8}$ $2\frac{5}{8}$ $2\frac{5}{8}$ $2\frac{5}{8}$ $2\frac{5}{8}$ $2\frac{5}{8}$ $2\frac{5}{8}$ $2\frac{5}{8}$ $2\frac{1}{2}$ $2\frac{1}$ $2\frac{1}{2}$ $2\frac{1}{2}$ $2\frac{1}{2}$ $2\frac{1}{2}$ $2\frac{1}{2}$ $2\frac{1}$	ference. Tip to Tip. Locality. $3\frac{1}{2}$	ference. Tip to Tip. Locality. $3\frac{1}{2}$ $1\frac{3}{8}$ N. Nigeria . $2\frac{1}{4}$ 2 Do. . 3 $2\frac{3}{8}$ Do. . $2\frac{7}{8}$ $2\frac{5}{8}$ Gambaga, Gold Coast $2\frac{3}{4}$ $1\frac{1}{2}$ Nigeria . $3\frac{1}{8}$ $1\frac{5}{8}$ Portuguese Guinea . $2\frac{1}{2}$ $2\frac{1}{2}$ 1 Nigeria . . $2\frac{1}{2}$ $2\frac{1}{2}$ Lagos . . . $2\frac{1}{2}$ $1\frac{1}{4}$ N. Nigeria . . . $2\frac{1}{2}$ $1\frac{1}{4}$ Lokoja, Nigeria $2\frac{1}{2}$ $1\frac{1}{4}$ Nigeria .

BEIRA 167



Head of Beira.

The BEIRA (Dorcotragus melanotis).

Beira or Baira, Somali.

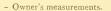
Although at one time classed with the gazelles, this peculiar little Somali antelope is considered to be best placed in the neighbourhood of the dik-diks. The beira is characterised by the moderately long and spike-like horns of the bucks; but its most striking peculiarity is the great size of its ears, which led its discoverer, Mr. Menges, to describe it as a species of klipspringer. Another noticeable feature is the large size of the rounded hoofs, which are supported on globular pads. In colour, the upper-parts and legs are greyish fawn, with a tinge of pink; a darker band defining the fawn from the white of the under-parts, which (the white) is continued down the inner surfaces of the limbs as far as the knees and hocks. The head, from the ears to the nose, is bright rufous. Height at shoulder, about 23 inches.

Viscount Edmond de Poncins writes that "beira are good hillclimbers, and keep on rocky ground. The general shape is slender, the legs are long, the head is kept erect, the ears are very big and broad, shaped like the dik-dik's, eyes big and dark, nostrils black.

"Colour a sort of greyish blue, a bit like what we call in French gorge-de-pigeon, and exactly matching the colour of the ground, so, unless they are on the move, it is difficult to distinguish them. Unlike a gazelle, the tail is generally kept down. Horns resemble those of the klipspringer, but curve forward slightly more." From nose to root of tail, $32\frac{1}{4}$; height at shoulder, 21 inches; horns, 4 inches; weight, about 20 lbs.

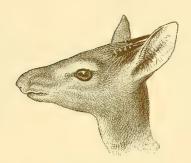
Distribution.—The interior of Somaliland and the upper part of the Blue Nile. The species appears to be rare and local, going about either singly or in pairs, and inhabiting the open desert. It was first made known to science in 1894.

Length on front.	Circum- ference.	Tip to Tip.	Locality.	Owner.
5	I $\frac{3}{4}$	34	Somaliland	J. Rosen.
415	$1\frac{7}{8}$	***	Do	Lord Delamere.
4 7 8	13	\mathbf{I}_{4}^{3}	Do	Capt. J. H. Brocklehurst.
$-4\frac{3}{4}$	I 3	2_{16}^{3}	Northern Somaliland	J. H. II. Dodds.
$-4\frac{3}{4}$	13	$2\frac{1}{2}$	Do.	R.E. Mess, Roorkee.
4 5	2	$2\frac{7}{8}$	Abyssinia	Major P. H. G. Powell-Cotton.
$4\frac{1}{2}$	$I\frac{3}{4}$	25g	Northern Somaliland	F. N. Ransford.
41	2	$2\frac{1}{2}$	Abyssinia	W. F. Whitehouse.
41	I 😤	I 🖁	Somaliland	A. de L. Long.
416	ΙΞ	$2\frac{5}{8}$	Do	Capt. R. A. McClymont.
4	2	$2\frac{1}{16}$	French Somaliland	Viscount Edmond de Poncins.
4	$2\frac{1}{8}$	2 ³ / _±	Somaliland	Sir Edmund G. Loder, Bart.
3 7	2	$2\frac{1}{4}$	Do	Capt. H. C. Dobbs.
34	13	21/4	Do	W. Mure.
31/4	13	2 ½	Do	H. D. Briggs.
3	I 1/4	2 ³ / _±	Do	P. K. Glazebrook.





Skull and Horns of Beira, from specimen shot by Major P. H. G. Powell-Cotton.



Head of Salt's Dik-dik.

SALT'S DIK-DIK (Madoqua saltiana).

This species, the Beni Israel of the Arabs, is the typical representative of a group of tiny, slenderly built antelopes characterised by the elongated, trunk-like nose, of which the tip is almost entirely hairy, the tuft of hair on the crown of the head, the short and almost rudimentary tail, and the minute size of the lateral hoofs. In the present species the last tooth in the lower jaw lacks the third lobe found in almost all ruminants, the muzzle is but moderately developed, and the general colour yellowish or fulvous grey, scarcely more rufous on the sides than on the back. Height at the shoulder, 14 inches.

Distribution.—The Coast Range of Eastern Abyssinia and adjacent districts.

Length on front.	Circum- ference.	Tip to Tip.	Locality.			Owner.
31/2	I $\frac{1}{2}$	$1\frac{3}{8}$?		Hon. Walter Rothschild.
31/4	$I\frac{1}{2}$	13	Abyssinia			V. Bell.
3	I	1	Do.			Sir Edmund G. Loder, Bart.
13		$I\frac{1}{8}$	Do.			H. Boughton Leigh.
23		$I\frac{3}{8}$	Do.			Major P. H. G. Powell-Cotton.
23	13	I 1/4	E. Sudan			Major H. H. S. Morant.
25/8		$1\frac{3}{4}$	Abyssinia			Sir Victor Brooke's Collection.
21/2	$1\frac{1}{2}$		North Kass	ala		Col. Ralph Vivian.
28		15		3		British Museum.

¹ Determination provisional.





Skull and Horns of Phillips's Dik-dik.

Head of Swayne's Dik-dik.

SOMALI DIK-DIKS

A.—Madoqua swaynei, M. phillipsi, and M. [Rhynchotragus] guentheri.

Sakáro, Somali.

Different districts of Somaliland are inhabited by several species of dik-diks, of which three are named above. The first of these is allied to Salt's dik-dik but smaller; it inhabits the northern half of Somaliland. Phillips's dik-dik, which also occurs in Northern Somaliland, is intermediate in size between Salt's and Swayne's dik-dik, from both of which it is distinguished by having the back grey and the sides and shoulders rich rufous or cinnamon. On the other hand, Günther's dik-dik is widely different from both, being nearly allied to the undermentioned Kirk's dik-dik, from which it is distinguished by the form of the nasal bones in the skull. It inhabits the central plateau of Northern Somaliland.

Height of Swayne's dik-dik at shoulder, about 13 inches. Weight, & 6 lbs.; \$\chi\$ 5 lbs.

Length on front.	Girth.	Tip to Tip.	Locality.		Owner.
135	I §	2	Somaliland		Col. H. D. Olivier.
3½	I 1	I §	Do.		J. Kenneth Foster.
34	1.1	13	Do.		W. W. Ashley.
$3\frac{1}{8}$		1 7 8	Do.		P. K. Glazebrook.
3.5	I.1	Γ_2^1	Do.		Col. C. F. Blane.
131		18	Do.		Sir Abe Bailey.
31	· I 1 8	13	Do.		P. H. Thomas.

¹ M. guentheri.

Length on front.	Girth.	Tip to Tip.	Locality.		Owner.		
¹ 3 ¹ / ₈	I ½	I 😩	Somaliland			A. E. Pease.	
3½	$1\frac{1}{2}$	18	Do.	٠		Capt. F. L. Livingstone- Learmonth.	
3	I ½	$\mathbf{I}\frac{1}{2}$	Do.			J. H. H. Dodds.	
3	I ½	$I\frac{1}{8}$	Do.			J. H. Miller.	
3		I	Do.			Sir Edmund G. Loder, Bart.	
3	I 1/4	13	Do.			Capt. G. H. Hastings.	
$2\frac{7}{8}$	•••	13	Do.			Major P. H. G. Powell-Cotton.	
$2\frac{7}{8}$	I 3	15	Do.			Lord Delamere.	
2 ⁷ / ₈	I ½	13/8	Do.			Lord Hindlip.	
218	I ½	3	Do.			LieutCol. E. G. Harrison.	
23	1 #	I ½	Do.	٠		R. E. Drake-Brockman.	
23	I	I	Do.			T. W. H. Clarke.	
23	I 1/2	I_8^1	Do.			A. E. Butter.	
2 ³ / _±	$I_{\frac{1}{2}}$	•••	Do.			C. Liddell.	
22 ²		$\mathbf{I}_{\overline{\lambda} \delta}^{-1}$	Do.			Major W. Anstruther Gray.	
2 ⁵ / ₈	I 1/4	I 8	Do.			A. de L. Long.	
$2\frac{1}{2}$	I 1	13	Do.			J. C. Monteith.	
$2\frac{1}{2}$	11	I ²	Do.			Capt. A. H. Mosse.	
2½		18	Abyssinia .			R. Hayne.	
		M. guentheri.			2 M.	phillipsi.	

The following are the dimensions of a specimen of *M. guentheri* shot at Njemps by Sir F. J. Jackson:—

Length, $23\frac{1}{4}$. Height, $15\frac{1}{4}$. Horns, $2\frac{1}{2}$. Weight, $8\frac{1}{4}$ lbs.

B.—M. piacentinii.

Length on front.	Girth.	Tip to Tip.	L	ocality		Owner.
2 1 5	$\mathbf{I}_{[\widetilde{1}]\widetilde{6}}^{-5}$	I ₁₆ 5	Somaliland			British Museum.
21	I 5	118	Do.			Hon. Walter Rothschild.

KIRK'S DIK-DIK (Madoqua [Rhynchotragus] kirki).

This dik-dik belongs to a small group of species differing from the one containing M. saltiana by the presence of three lobes to the last tooth of the lower jaw, and likewise by the more decidedly trunk-like character of the muzzle. From the other members of the group M. damarensis differs by its superior size, and M. guentheri by the still greater development of the trunk. They belong to the subgenus Rhynchotragus. Weight, about 7 lbs.

Distribution.—East Africa, from Southern Somaliland to Ugogo, most numerous on the coast.

Length on front.	Circum- ference.	Tip to Tip.	Locality	٠.		Owner.
35	I ½	17	East Africa			J. V. Colby.
-3 5	15	I $^1_{\bar{8}}$	Rift Valley			C. Steuart Betton.
$3\frac{1}{2}$	13		East Africa			The late Prince P. Demidoff.
3 170	$1\frac{3}{4}$	15	Do.			J. B. Wheelwright.
1 38		$1\frac{1}{2}$	Do.			F. C. Selous.
38	I 1	2	Do.			Marquis of Tweeddale.
38	I 1	2	Do.			P. Fleming.
3 i 5	I $\frac{1}{2}$	$\mathbf{I}_{1}{}^{7}_{6}$	Uganda .			Major P. H. G. Powell-Cotton.
34	I 4	$I_{\frac{1}{4}}$	East Africa			Hon. Walter Rothschild.
34	2	$1\frac{1}{2}$	Do.			K. V. Painter.
34	13	2 s	Do.			Capt. M. L. Pears.
34	I 1/4	I 5	Do.			H. Johnson.
31	I 1 8	13	Do.			W. P. Lowe.
3\$	I ½	$1\frac{3}{4}$	Do.			J. Todd.
31		2.1	Do. ·			Major W. E. Stobart.
3 -			Do.			A. Benitz.
3%		$1{}^1_2$	Do.			G. C. Slacke.
31		18	Do.			G. de P. Colvile.
3	$\Gamma_2^{(1)}$	13	E. of Lake (Chom	10.	Lord Hindlip.
3	1 3	1 ;;	East Africa			II. Fowler.
3		1 1/2	Do.			Sir F. J. Jackson.

⁻ Owner's measurements.

¹ M. cavendishi.

Length on front.	Circum- ference.	Tip to Tip.	Locality	ř.	Owner.
3		\mathbf{I}_4^{1}	East Africa		Capt. R. H. Hermon-Hodge.
3	2	I 5	Do.		Capt. the Hon. G. II. Douglas- Pennant.
3		I ½	Do.		R. de la Huerta.
3	1 1 2	$1\frac{9}{1}$	Do.		Percy C. Madeira.
3	•••	2	Do.	•	Gerard Buxton.
3		2	Do.		S. S. Steele.
$^{1}2_{1\overline{6}}^{1\overline{5}}$	13	\mathbf{I}_4^3	Do.		Sir F. J. Jackson.
1 23	•••	$I_{\frac{3}{4}}$	Lake Baring	go .	Rhys Williams.

¹ M. cavendishi.

DAMARA DIK-DIK (Madoqua [Rhynchotragus] damarensis).

Characteristics mentioned under heading of the preceding species.

Distribution.—Damaraland and Angola.

Length on front.	Circum- ference.	Tip to Tip.	Locality.		Owner.
4	$I\frac{3}{4}$	I ½	?		Sir Owen Philipps.
-3 ¹ / ₄	112	I ½	?		P. C. Keytel.
-3		•••	?		Capt. M. Jurich.
$-2\frac{5}{8}$	15	I 5	Omararu .		J. B. Wheelwright.
-2 5	15	1 7	Do		Capt. W. Jardine.
$-2\frac{1}{2}$		•••	Damaraland .		South African Museum. (Type specimen.)

HEMPRICH'S DIK-DIK (Madoqua hemprichiana).

Further information is desirable as to the claim of this dik-dik to distinction from *M. saltiana*.

Length on front.	Circum- ference.	Tip to Tip.	Locality.			Owner.		
38	13	I ½	Basaland			Hon. Walter Rothschild.		
25	I 4	I .	Blue Nile			Capt. J. A. Pollock.		
2 1 6	13	$I_{1}^{-1}_{6}$	Abyssinia			Hon. Walter Rothschild.		

⁻ Owner's measurements.



Head of Oribi.

The ORIBI (Oribia scoparia).

Also known as Oribia oribi.

Inla, Swazi and Zulu. Pulukudukamani, Basuto.
Nakafwifwi, Chila. Kamunda, Barotsi and Batoka.
Mazia, Hausa.

The oribis, grysbok, klipspringer, and their allies constitute a group of comparatively small African antelopes presenting the following characters in common. The muzzle has a naked tip, the head is devoid of a tuft of hair, large face-glands open beneath the eyes by a small aperture on each side, the tail is short or moderate, and lateral hoofs may or may not be retained. Horns are usually present only in the bucks, and are short, almost or quite straight, with smooth tips and ridged bases. The upper cheek-teeth have tall and narrow crowns. The oribis, which are the largest members of the group, have normal hoofs and hair, and are specially distinguished by the presence of a bare glandular spot beneath each ear, and of a large opening in the skull beneath each eye-socket. In the typical species the horns of the bucks are comparatively smooth and slender, with only their basal two inches slightly ridged; there is a black patch on the forehead between the horns; and the tail is tufted and moderately bushy, with its terminal two-thirds black. Height at shoulders, 24 to 26 inches.

Distribution.—Typically, Africa south of the Zambesi. On grassy plains this graceful little antelope is still plentiful in many districts.

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Length on front.	Circum- ference.	Tip to	Locality.			Owner.
7 1 6	2 j ^S 6	$2\frac{1}{4}$	Angola			G. W. Penrice.
6 <u>1</u>		$2\frac{7}{8}$	Near Ladysmith			Col. P. J. R. Crampton.
6 <u>3</u>	2 \frac{1}{8}	I_8^1	N.W. Rhodesia		,	P. R. Ramsey.
61/4	$2\frac{1}{4}$		E. Griqualand .			British Museum (J. ff. Darling).
6	2 ¹ / ₈	$2\frac{1}{4}$	Spitzkop			H. T. and A. H. Glynn.
6	$I\frac{1}{2}$		Rhodesia			H. H. Williams.
6	2	28	Angola			C. H. Pemberton.
6	2	4	N.W. Rhodesia.			R. E. Critchley-Salmonson.
5 7	2	3 4	Do			T. D. M. Cardeza.
$5\frac{7}{8}$	28	$3\frac{1}{2}$	Do			R. C. Wood.
5 ³ / ₄	2 ³ / ₈	2 3 8	Nyasaland			J. H. Hayes.
5 ³ / ₄	2	34	N.W. Rhodesia.			H. Timmins.
5 ³ / _±	2	$2\frac{1}{4}$	Do			Capt. R. Meinertzhagen.
5 ³ / ₄	2	$2\frac{3}{4}$	Do			Lady Sarah Wilson.
55	2	$2\frac{3}{4}$	Bengueolo .			F. Smitheman.
5§	$2\frac{1}{8}$	$\mathbf{I}\frac{7}{8}$	Transvaal			F. R. N. Findlay.
55	2	28	N.W. Rhodesia			Col. Lord Douglas Compton.
55	2	$2\frac{3}{4}$	Do.	,		Sir Owen Philipps.
$5\frac{1}{2}$	2	$3\frac{1}{2}$	Do.			Capt. H. T. Lumsden.
$5\frac{1}{2}$	13	2 ⁵ / ₈	Do.			G. L. Harrison.
5½	2	2 /	N.E. Rhodesia .			Hon. W. Guinness.
$5\frac{1}{2}$	$2\frac{1}{4}$	$2\frac{1}{4}$	N.W. Rhodesia			Hon. Guy Wilson.
			OWNER'S ME	ASU	REI	MENTS.
7 1 2	$2\frac{3}{4}$	2 5	Zomba, Nyasalano	1.		D. MacAlpine.
61/2		$I\frac{3}{4}$	Batoka Plateau .			E. Folley.
$6\frac{1}{2}$		3≟	?			J. L. Drège.



Head of Abyssinian Oribi. Shot by Lieut.-Col. P. Polovtsoff.

The ABYSSINIAN ORIBI (Oribia montana or O. cœrulea).

Făckō and Miwaka, Abyssinian. Mori or Lōyīk, Dinka.

Very similar in most characters to the typical species, but with a shorter and less bushy tail, the tip of which has only a few sparse black hairs. Height at shoulder, 22 to 23 inches. These antelopes are shy and rarely seen in the open, preferring the thick bush and long grass. If disturbed, they go at a great pace with their heads quite close to the ground. The flesh is good.

A male weighing 38 lbs. stood $22\frac{1}{2}$ inches at the shoulder.

Distribution.—Abyssinia and Bogosland, with part of the Sudan.

Length on front.	Circum- ference.	Tip to Tip.	Locality.	Owner.
5 %		$2\frac{1}{8}$	Bahr-el-Ghazal .	Capt. J. L. F. Tweedie.
53		$2\frac{1}{2}$	Bahr-el-Zaraf .	E. M. Tabor.
51	2	I_{S}^{1}	Kordofan	E. A. T. Bayley.
58	2	2 %	Abyssinia	Sir Abe Bailey.
5	2	2 %	Sudan	Capt. G. Wauhope.

EAST AFRICAN ORIBIS (Oribia kenyæ, O. cottoni, etc.)

Several oribis allied to the last have been described from B.E.A.; O. kenyæ being from Mt. Kenia, and O. cottoni and O. microdon from the Guasin-gishu Plateau.

Length on front.	Circum- ference.	Tip to Tip.	Loc	cality		Owner.
6 7	2 ³ / _±	3 ³ / ₈	E. Africa			LieutCol. P. Polovtsoff. (See illustration, page 176.)
63	$2\frac{1}{2}$	3	Do.			G. P. L. Cosens.
$6\frac{1}{2}$	$2\frac{1}{4}$	3 ¹ / ₄	Near Mou	nt E	Clgon	Capt. H. C. S. Ashton.
61/2	$2\frac{1}{2}$	$2\frac{3}{4}$	E. Africa			Col. Max. C. Fleischmann.
6옿	28	2	Near Lak	e Vi	ctoria	G. J. Muir.
61	21/4	3	E. Africa			H. B. Tate.
6‡	21	$2\frac{1}{4}$	Do.			C. Bower Ismay.
6 1 8	2	3	Do.			W. A. Baird.
6 1	2	23/4	Do.			R. B. Loder.
6	23	27	Do.			H.R.H. the Duke of Connaught.
6	21	2 3	Do.			Capt. M. L. Pears.
6	21	31	Do.			Capt. R. Meinertzhagen.
6	2	$2\frac{7}{8}$	Do.			W. N. McMillan.
6	21/2	2 ¹ / ₄	Do.			Capt. W. H. Wilkin.
53	2 ¹ / ₄	$2\frac{1}{3}$	Do.			E. B. Horne.
5₹	21	2	Do.			G. de P. Colvile.
5 5	28	2	Do.			Lieut. S. R. Bailey, R.N.
5½	13	3½	Do.			Duke of Medinaceli.
$5\frac{1}{2}$	2	$2\frac{1}{4}$	Do.			F. C. Selous.
5½	$2\frac{1}{2}$	$2\frac{3}{4}$	Do.			Capt. R. Meinertzhagen.
$5\frac{1}{2}$	$2\frac{1}{4}$	2	Do.			A. G. Murray Smith.
$5\frac{1}{2}$	$2\frac{1}{4}$	2 ½	Do.			Capt. C. Brook.
$5\frac{1}{2}$	2	$2\frac{1}{8}$	Do.			Sir Richard Dane.
$5\frac{1}{2}$		3	Do.			L. L. Biddle.
$5\frac{1}{2}$	2 5 /8	$2\frac{1}{4}$	Do.			H. Fowler.
5 8	2 ¹ / ₄	$2\frac{1}{2}$	Do.			A. de Rothschild.
58	$2\frac{1}{4}$	2	Do.			H. S. Keating.
58	$2\frac{1}{8}$	3 3	Do.			Sir F. J. Jackson.
5흫	2 ¹ 8	I 7/8	Do.			Duke of Peneranda.
58		$2\frac{1}{2}$	Do.			R. de la Huerta.
58		3	Do.			H. B. Cox.
58		3	Do.			C. W. Turner.
5 ¹ 8	28	2 7 8	Uganda			Major P. H. G. Powell-Cotton.

The GAMBIAN ORIBI (Oribia nigricaudata).

Bevsia, Hausa.

A species very close to the Abyssinian oribi, but of smaller size, greyer, and with a distinct black tip to the tail, as in the Cape species. Height at shoulder, 21 inches.

Distribution.—The open country of Senegal and Nigeria.

Length on front.	Circum- ference.	Tip to Tip.	Locality		Owner.	
$4\frac{3}{4}$	$2\frac{1}{2}$	$2\frac{1}{4}$	Lake Chad			Capt. S. B. B. Dyer.
$4\frac{5}{8}$	I 3	$2\frac{1}{2}$	N. Nigeria .			Capt. T. N. Puckle.
$4\frac{1}{2}$	13	$2\frac{1}{4}$	Nigeria .			Capt. G. B. Scott.
4136	I 7/8	2	Do			F. Dwyer.
41/8	$1\frac{3}{4}$	$2\frac{1}{4}$	Do			Capt. H. V. Bastow.
$4\frac{1}{8}$		2	Gold Coast			Capt. B. E. Murray.
4	13	2	Nigeria .			Capt. H. A. Porter.
4		$2\frac{3}{4}$	Do			Major J. A. Burdon.
4	13	$2\frac{3}{4}$	Do			Capt. S. C. Peck.
4	$I\frac{1}{2}$		Senegambia			G. Fenwick Owen.
4	1 <u>5</u>	$2\frac{1}{2}$	N. Nigeria .			Major E. M. Baker.
3 ³ / ₄	I 5/8	I 2/8	Ashanti .			D. H. M. Boyle.

HAGGARD'S ORIBI (Oribia haggardi).

Taya, Swahili.

Nsilatso, Uganda.

Distinguished from other oribis by the stouter horns, which are strongly ridged for rather more than the basal half of their length. Height at shoulder, about 24 inches.

Distribution.—The coast districts of East Africa in the neighbourhood of Lamu. Some of the undermentioned specimens may belong to allied species.

Length on front.	Circum- ference.	Tip to Tip.	Ι	Loca	lity.		Owner.
68	$2\frac{1}{8}$	3	East Africa				Hon. Walter Rothschild.
6	$2\frac{1}{2}$	$2\frac{1}{8}$	Do.				H. Twyford.
$5\frac{3}{4}$	$2\frac{1}{2}$	2	Tana Valley				Capt. J. Harington.
5 \$	$2\frac{1}{4}$	21	East Africa				C. Craig.
$5\frac{1}{2}$		2 ⁷ / ₈	Do.				C. C. Bowring.
$5\frac{1}{2}$	21	$3\frac{1}{8}$	Do.				L. Aylmer.
58	2	2 ⁵ ₈	Tana Valley				Capt. Mackenzie Murray.
53		28	East Africa				Dr. A. Paget.
¹ 5½	2 ¹ / ₄	2	East Central	Afi	rica		Hon. Walter Rothschild.
1 5½	I 1 8	23	North end of	f La	ke Al	bert	Col. Trevor Ternan.
51/8	2	34	East Africa				Col. A. Colville.

¹ Determination provisional.

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Head of Suni. Shot by Mr. F. C. Selous.

The SUNI (Neotragus moschatus).

The elegant little antelopes included in the genus *Neotragus* are near relatives of the oribis, from which they are distinguished by the absence of a naked glandular patch below the ear and the want of lateral hoofs. They are further characterised by the horns being directed backwards nearly or quite in the plane of the face, as also by the large size of the open spaces in the skull in front of the sockets of the eyes, and the breadth of the nasal bones. In the present species the horns, although short, project behind the back of the head, are somewhat elevated above the plane of the forehead, and strongly and closely ridged, while the colour of the upper parts, inclusive of the tailtip, is greyish fawn. Height at shoulder, 13 to 14 inches.

Distribution.—Zanzibar, adjacent islets, and mainland coast from B.E. Africa, through Kilimanjaro, to Mozambique.

Length on front.	Circum- ference.	Tip to Tip.	Lo	cality.			Owner.
31	$I_{\frac{1}{2}}^{1}$	2	Zanzibar				Sir John Kirk.
34	13	$I\frac{1}{2}$	Do.				British Museum (Capt. Speke).
34	$I_{\frac{1}{4}}$	$I\frac{1}{2}$	Do.				British Museum (Sir John Kirk).
$2\tfrac{1}{1}\tfrac{3}{6}$	$I_{\frac{1}{4}}$	13	Kikuyu .				Master of Belhaven.
$2\frac{1}{1}\frac{3}{6}$	I 38	I §	Do				Sir F. J. Jackson.
$2\frac{3}{4}$	$1\frac{1}{2}$	$I\frac{1}{2}$	Near Nairobi				F. C. Selous. (See illustration.)
			OWNER'S	MEA	ASU	REM	ENTS.
3 ⁷ / ₈	1 7 8	$1\frac{5}{8}$	Zanzibar				Dr. Albert von Stephani.
38		18	Do.				F. C. Selous.



Skull and Horns of Livingstone's Suni.

LIVINGSTONE'S SUNI (Neotragus livingstonianus).

Lumswi, Shupanga. Inhlengana, Amatonga.

Distinguished from the preceding species by its slightly superior dimensions (height at shoulder, 14 to 15 inches), the longer and thicker horns, more rufous coloration, and the blackish upper surface of the tail.

Two specimens killed by Mr. F. Vaughan Kirby measured-

	Male.	Female.
Extreme length over all, tip of nose to end of tail	$27\frac{1}{8}$ ins.	$25\frac{3}{4}$ ins.
Length of tail	$3\frac{1}{2}$,,	3 "
Perpendicular shoulder-height	$14\frac{1}{4}$,,	$13\frac{1}{8}$,,
Girth behind the shoulder	$14\frac{1}{8}$,,	$13\frac{5}{8}$,,

Distribution.—South-East Africa, from Mozambique to Zululand; the race from Zululand being distinguished as N. livingstonianus zuluensis.

Length on front.	Circum- ference.	Tip to Tip.	Locality.	Owner.
$4\frac{1}{2}$	$1\frac{3}{4}$	I ½	Zambesia	Rowland Ward.
4 ³ / ₈	2 ½		Gungunyana's country	British Museum (H. T. Glynn).
4π ³ ε		1 7 8	Inhambani	Major J. Stevenson-Hamilton.
44	1 8	13	Delagoa Bay	Col. Lord Douglas Compton.

Length on front.	Circum- ference.	Tip to Tip.	Locality			Owner.
4 ½		I	Delagoa Bay			F. C. Selous.
4		17/8	Do.			A. Torre do Valle.
4	•••	$I\frac{1}{2}$	Do.			A. F. Williams.
3 ⁷ / ₈		I ½	Do.			Sir Owen Philipps.
3\frac{3}{4}	I ½	$I_{\vec{S}}^{\pm}$	Zambesia .			Sir Edmund G. Loder, Bart.
33	I 1/4	21	Delagoa Bay			W. E. Butcher.
311	13	$2\tfrac{5}{16}$	Do.			Hon. Walter Rothschild.
		OW	NER'S MEAS	URI	EME	NTS.
5	I 7/8	$2\frac{1}{4}$?			C. S. Mann.
4 ⁵ / ₈	2	$2\frac{1}{4}$?		/	Sir Abe Bailey.
42		13	}			F. J. Newnham.
$3\frac{7}{8}$	$I\frac{3}{4}$	I 1/4	Delagoa Bay			Capt. R. Meinertzhagen.



Skull and Horns of Record Steinbok, the property of Mr. D. Mackintosh.

The STEINBOK (Rhaphiceros campestris).

Isha, Swahili.
Ingaina, Swazi.
Timba, Barotsi and Batoka.

Impulupudi, Basuto.
Phuduhudu, Bechuana.
Umgwena, Matabili.

From the other members of the oribi group the grysbok and its cousin the steinbok are readily distinguished by the absence of a bare ear-patch, and by horns rising nearly vertically from the skull, in which the open spaces below the eye-sockets are unusually small. As mentioned below, this species is at once distinguished from the grysbok by the absence of the lateral hoofs and the uniform colour of the coat. The general tint of the latter is bright sandy rufous, becoming richer on the head, with a black horseshoe-mark on the crown. Height at withers, about 22 inches. Weight, about 25 lbs.

Distribution.—Africa south of the Zambesi on the east, and the Cuneni on the west, the north-east Transvaal race being separated as R. c. capricornis, and coming nearer to the Nyasa R. c. neumanni, which is paler. Probably owing to its small size, the steinbok has managed to escape the fate that has befallen so many South African antelopes. Wherever the traveller journeys on the veldt, he is

almost certain to meet this species, which may be regarded as the most familiar game-animal of the plains. Like many of its kindred, it is independent of water, and can exist in the heart of the Kalahari, where water may not occur for fifty miles.

Length on front.	Circum- ference.	Tip to Tip.	Locality.		Owner.
$7\frac{1}{2}$	13	$3\frac{1}{2}$	Cape Colony.		D. Mackintosh. (See illustration.)
$6\frac{1}{2}$	2	243	?		Sir Owen Philipps.
6	2	$2\frac{1}{4}$	N. Transvaal.		Hon. Walter Rothschild.
5 7 8	13	I 5/8	East Africa .		Percy C. Madeira.
5 13		$2\frac{5}{8}$	Near Middelburg		Major E. H. E. Abadie.
5≩	2	18	South Africa .		Sir Edmund G. Loder, Bart.
$^{1}5^{\frac{1}{2}}$		$I_{\frac{9}{16}}$	Kimberley .		F. C. Selous.
5 1 76		2 5	Cape Colony .		British Museum.
53	2	13	East Africa .		E. Gedge.
5흫	$2\frac{1}{4}$	2 ³ / ₈	?		G. B. Plumptre.
51		$I_{\frac{1}{2}}^{\frac{1}{2}}$	South Africa .		J. B. Neilson.
54	$I\frac{7}{8}$	$2\frac{3}{8}$	Do		Capt. Lord R. Wellesley.
51	$I\frac{7}{8}$		East Africa .		Capt. E. H. Sinkinson.
51	13	$2\frac{I}{S}$	Cape Colony .		E. McClellan.
5 ¹ / ₈	I 3	I 7/8	East Africa .		F. C. Selous.
5 t	I_{4}^{3}	1 7 8	Do		Mrs. Percy C. Madeira.
♀ 5			Do		J. G. Millais.

¹ Killed with hounds.

OWNER'S MEASUREMENTS.

7 8		• • •	Cape Colony	C. S. Mann.
$6\frac{7}{8}$			Graaf Reinet, C.C.	American National Collection.
5₹	I 7/8	3	?	Mr. Justice Hopley.
5≟	13	$I\frac{7}{8}$?	J. Whitaker.
58	13	$2\frac{1}{4}$?	Major H. Chamney.
5 5	2	I 1/4	?	Sir Abe Bailey.
55	I 3	13	Griqualand, West.	A. F. Williams.



Skull and Horns of Sharpe's Steinbok.

SHARPE'S STEINBOK (Rhaphiceros sharpei).

This species has the white-speckled chestnut coat of a grysbok, coupled with the feet of a steinbok. The crown of the head has a crescent-shaped black mark; and the large ears are very sparsely haired externally.

Distribution.—Nyasaland and Rhodesia; represented by a local race, R. s. colonicus, in North-eastern Transvaal and Swaziland.

Length on front.	Circum- ference.	Tip to Tip.	Locality.		Owner.
${\color{red}2_{1\bar{6}}^{3}}$	13	$1\frac{3}{4}$	B.C. Africa		H. S. Buist.
13 .	$I_{\overline{1}\overline{6}}^{7}$		Near Tete		D. D. Lyell.
18		1 §	N.E. Rhodesia .		Major L. Boyd-Moss.
$\mathbf{I} \frac{9}{16}$	I $\frac{1}{2}$	$I\frac{1}{2}$	Lower Shiré River		Lord William Percy.
1 1/2		2	B.C. Africa		R. C. Wood.
I ½	$I\frac{1}{2}$	$2\frac{1}{8}$	Do		Dr. J. O. Shircore.
$1\frac{1}{2}$	I 1/2	I ½	N.W. Rhodesia .		Marquis Pizzardi.
14	I 1	13	N.E. Rhodesia .		Hon. Walter Rothschild.
I .1	I 7/8	18	B.C. Africa		L. H. Cripps.
		0'	WNER'S MEASURE	ЕМЕ	NTS.

N.W. Rhodesia . Dr. A. H. B. Kirkman.
Do. . C. S. Mann.



Head of Steinbok.

The GRYSBOK (Rhaphiceros [Nototragus] melanotis).

Isikupi, Basuto.

Kulu, Makua.

Timba, Chila.

Grysbok retain the lateral hoofs, which have disappeared in steinbok, and are further distinguished by the fur showing a large admixture of white, instead of being uniformly coloured. Height at shoulder, 22 inches. Weight, 24 lbs. The species has been made the type of a separate genus—Nototragus.

Distribution.—South Africa, extending as far north as Natal and Mozambique.

				1		
Length on front.	Circum- ference.	Tip to Tip.	Locality.			Owner.
4 4 7 8	$1\frac{1}{2}$	1 7 8	Cape Colony.			R. A. Cooper.
4½	I 3	2	Do			LieutCol. H. J. G. Lloyd.
$4\frac{1}{2}$		$1\frac{1}{2}$	Do			Sir Owen Philipps.
38	I $\frac{3}{4}$	2 <u>1</u>	Knysna, C.C.			Commander the Hon. R. O. B. Bridgeman, R.N.
3 1 8	$I\frac{3}{4}$	I 7/8	Cape Colony.			F. C. Selous.
$3\frac{1}{4}$	$I\frac{1}{2}$	I 3	Knysna .			Sir H. J. Goold-Adams.
		OV	VNER'S MEASU	URE	ME	NTS.

Caledon, C.C.

Cape Colony . . P. C. Keytel.

. South African Museum.

I34

45



Head of Klipspringer.

The KLIPSPRINGER (Oreotragus saltator).

Alakud, Somali. Chipomco, Chilala. Chinkomo, Chinyanja. Ingululu, Makalaka. Ikumi. Basuto. Klipbok, Boer. Ligoka, Zulu and Swazi. Njereri, Batoka. Sassa, Abyssinian. Ngombani, Chila.

Not only from the other members of the oribi group, but from antelopes of all kinds, the agile little klipspringer, or "rock-jumper," is distinguished by the peculiar conformation of its hoofs and the structure of its hair. The former are large, cylindrical, blunt, and so situated in regard to the rest of the limb that the animal walks on what corresponds to their tips in other antelopes, the whole hoof thus rising vertically from the ground. As regards the hair, this may best be compared with that of the musk-deer, having the same brittle, pithy structure. Lateral hoofs are retained; the tail is reduced to a mere rudimentary stump; and the horns of the bucks rise nearly vertically from the head, with a slight forward curvature, and are ringed for their basal third. The hairs are olive-grey tipped with golden yellow, thus giving the characteristic speckled hue to the coat. Height at shoulder, from about 20 to 22 inches.

Distribution.—Mountainous and rocky districts in South and East Africa, from the Cape northwards to Nigeria in the west and Abyssinia in the east. The species has been divided into several local races of which the typical southern one has relatively short ears, with little black on them. In the East African O. s. schillingsi the females carry horns; the Nigerian race is O. s. porteousi.

Length on front.	Circum- ference.	Tip to Tip.	Locality.		Owner.
5 1 3	$2\frac{1}{4}$	I 5/8	N.E. Rhodesia		P. M. Stewart.
5½	2 ³ / ₈	I 5	P.E. Africa .		Hon. Walter Rothschild.
53	2	$2\frac{1}{8}$	N.E. Rhodesia		Dr. F. O. Stoehr.
51	$2\frac{1}{2}$	$2\frac{1}{4}$	Swaziland .		C. H. Taylor.
5 ¹ / ₈	2	$2\frac{1}{4}$	Lebombo Mts.		R. T. Coryndon.
43/4	I 🖁	28	East Africa .		Capt. W. B. Brook.
44	2	$2\frac{1}{2}$	Nyasaland .		J. Stewart Wells.
4 ³ / ₄	$2\frac{3}{8}$	2 ½	Rhodesia .		Col. Lord Douglas Compton.
4 5	2	$2\frac{1}{2}$	East Africa .		Capt. J. N. Price Wood.
$4\frac{1}{2}$	$2_{1}^{3}_{\overline{6}}$	2116	Witberg, Cape Co	olony	H. A. Bryden.
$4\frac{1}{2}$		2 ³ / ₈	N.E. Rhodesia		Major L. Boyd-Moss.
$4\frac{1}{2}$	$2\frac{1}{2}$	$2\frac{1}{2}$?		Capt. J. Harington.
$4\frac{1}{2}$		I 3/4	S. Rhodesia .		Major L. Williams.
$4\frac{1}{2}$	2	31	East Africa .		E. Gedge.
$4\frac{1}{2}$		$2\frac{5}{8}$	Do		Sir Owen Philipps.
$4\frac{1}{2}$	$2\frac{1}{4}$	2 t	B.C. Africa .		E. Homer.
417	25	2½	E. Mashonaland		F. C. Selous.
4 3	I 3/4	21	Matabililand		Hon. R. A. Ward.
48	21	$2\frac{1}{4}$	N.E. Rhodesia		H. Cookson.
4 3	$2\frac{1}{4}$	$2\frac{1}{8}$	East Africa .		W. H. Levy.
4 3 8	***	$2\frac{1}{8}$	Do		G. B. Blackwell.
48	2	2	Somaliland .		Capt. C. Steele.
41	21/4	$2\frac{5}{8}$	Do		Capt. R. A. McClymont.
41	2	$2\frac{1}{4}$	Do		A. de L. Long.
4 1 8	$2\frac{1}{2}$	I 🖁	North Nyasaland		James Yule.
4	I 7/8	2	Sudan		Major H. H. S. Morant.
♀4	2	21	East Africa .		Capt. R. Hall.
3 7	1 ⁷ / ₈	$2\frac{1}{4}$	Abyssinia .		Major P. H. G. Powell-Cotton.
3 7	2	$2\frac{1}{4}$	Do		J. H. Miller.
311		$2\frac{3}{8}$	N. Nigeria .		British Museum (Dr. E. J.
♀ 3‡	134	2	East Africa .		Porteous). Stephenson R. Clarke.
. 31	-				•

OWNER'S MEASUREMENTS.

5 7	21	3	Transvaal	٠	C. S. Mann.
Q 43	2	I 13	East Africa		Capt. R. S. Hart.



Frontlet and Horns of Waterbuck.

The WATERBUCK (Cobus ellipsiprymnus).

Chuzu, Chilala and Chizenga. Kring-gaat, Boer. Li Tumogha, Matabili. Mukulo, Chila.

M'dongoma or Matutwi, Barotsi. Kuru, Swahili. Tumoga, Bechuana. Na' Toro, M'Kua.

The waterbucks and their smaller allies the kobs, together with the reedbucks and vaal rhebok, constitute a well-defined group of large or medium-sized African antelopes presenting the following characteristics. They have the muzzle naked, rudimentary face-glands, a moderately long tail, well-developed lateral hoofs, and the horns confined to the bucks. In shape and size the horns are variable, being either long or medium, but never spirally twisted, and always with smooth tips, below which they are ridged; usually they are at first inclined somewhat backwards, after which they are curved upwards and more or less forwards, although they may have a sinuous curvature, and in the vaal rhebok are straight. The upper cheek-teeth are tall and narrow. In the waterbucks and kobs, which include the largest representatives of the

group, there are no naked patches on the head below the ears, the tail is comparatively long, with a slight terminal tuft, and the lateral hoofs are large. A characteristic feature of the skull is the presence of a deep hollow in the forehead. From its allies the true or common waterbuck is recognisable at a glance by the elliptical white ring on the buttocks, which extends downwards to the thighs. Height at shoulder, from 48 to 53 inches. Weight, about 360 lbs. clean.

Distribution.—Africa north of the Limpopo along the eastern coast region as far as the Shebeyli River in Somaliland; thus including Nyasaland and British and German East Africa. Its present strongholds are the districts between the Sabi and Zambesi, the affluents of the latter, and the Chobi, Okavango, and other rivers above Lake Ngami; it occurs locally in Mozambique and Portuguese Amatongaland; but in Barotsiland, N.W. Rhodesia, it is stated to be replaced by the defassa. White waterbuck, with eyes of normal colour, occur on the Guasu-nyero, near the Lorian swamp, B.E. Africa. Numerous local races have been named.

Length on front.	Circum- ference.	Tip to Tip.	Locality.		Owner.
$36\frac{1}{4}$	83	$20\frac{1}{4}$	Delagoa Bay .		American National Collection.
35	$9\frac{3}{4}$	$16\frac{3}{4}$	Sabi River .		Major J. Stevenson Hamilton.
$33\frac{1}{2}$	91	$2I\frac{1}{2}$	S.E. Africa .		Hon. Walter Rothschild.
33	83	22 3 8	Nyasaland .		Capt. R. Meinertzhagen.
33	98	II $\frac{1}{2}$	Mashonaland .		British Museum (F. C. Selous).
33	83	24	Do		J. G. Millais.
32 ³ / ₄	9 3	21 ³ / ₈	South Africa .		Sir Victor Brooke's Collection.
325	83	251	N. Transvaal .		Major F. W. Jarvis.
$32\frac{1}{2}$	$9\frac{1}{2}$	$29\frac{1}{2}$	N.W. Rhodesia		R. T. Coryndon.
32	10	$22\frac{1}{2}$	Rhodesia .		Val Gielgud.
313	91	24	Zululand .		Major L. O. Williams.
313	11	$18\frac{3}{4}$	N.W. Rhodesia		J. H. Leche.
313	81	$22\tfrac{1}{2}$	P.E. Africa .		British Museum (the late Rowland Ward).
$31\frac{1}{2}$	$9\frac{1}{4}$	131	Do		J. Pinto Leite.
$31\frac{1}{2}$	9	231	Do		Sir Owen Philipps.
31½	9	16	East Africa .		A. Saunderson.
314	10\frac{1}{8}	135	Pungwe		Earl of Dunmore.
311	95	191	South Africa .	4	Sir Edmund G. Loder, Bart.

Length on front.	Circum- ference.	Tip to Tip.	Locality.			Owner.
31	$9^{\frac{1}{2}}$	22	Zululand .			R. D. Talbot.
31	$9\frac{1}{2}$	15	Rhodesia .			A. W. Griffin.
31	83	32	Zambesia .			R. H. Storey.
31	$9\frac{1}{2}$	22	Mashonaland .			F. C. Selous.
303	$9\frac{1}{2}$	27	E.C. Africa .			C. E. Dashwood.
30 ³ / _±	91	$24\frac{1}{4}$	Ngamiland .			Mervyn G. Williams.
30=	8	$23\frac{1}{4}$	Pungwe			Col. Lord Douglas Compton.
30₹	81	$24\frac{1}{2}$	Do			J. C. Phillips.
30½	83	25	Nyasaland .			S. Robins.
$29\frac{3}{4}$	9	$15\frac{1}{4}$	Rhodesia .			C. W. Adams.
$29\frac{3}{4}$	83	25	East Africa .			J. Giffard.
29	9	10	P.E. Africa .			R. Elliott-Cooper.
29	$8\frac{1}{2}$	324	Do			Rhys Williams.
29	$9\frac{1}{2}$	26	East Africa .			E. Gedge.
29	9	$23\frac{3}{4}$	S.E. Africa .			R. E. Critchley-Salmonson.
29	$9\frac{1}{2}$	162	East Africa .			Col. W. H. Williams.
283	81	23	Lake Baringo.			H. Hyde-Baker.
$28\frac{3}{4}$	81	$8\frac{1}{2}$	P.E. Africa .			Capt. R. A. McClymont.
28 3	IO^1_2	131	Rhodesia .			Dr. Sauer.
$28\frac{1}{2}$	$10\frac{1}{2}$	$22\frac{1}{2}$	Do			W. Harcourt Webb.
$28\frac{1}{2}$	IO	I 5½	S.E. Africa .			H. W. Elliott.
$28\frac{1}{2}$	$9\frac{1}{4}$	$20\frac{3}{4}$	N.E. Rhodesia			F. H. Melland.
$28\frac{1}{2}$	$9\frac{3}{4}$	10	East Africa .			G. de P. Colvile.
$27\frac{3}{4}$	8	18	Somaliland .			A. E. Butter.
27	83	211	Gallaland .			Ivor Buxton.
			OWNER'S MEA	ASU	REM	ENTS.
36§	•••	39	?			C. S. Mann.
351	9	14	?			Mr. Justice Hopley.
342	• • •	•••	Limpopo Valley Africa	, S	.E.	H. T. and A. H. Glynn.
33	84	17.1	Do			A. Ohlsson.
314	81	21 ⁷ / ₈	North of Pungwe	٠	•	Count E. Hoyos.
315	9	17	;			Sir Abe Bailey.



Skull and Horns of Defassa Waterbuck, in the Tervueren Museum.

The DEFASSA or SING-SING WATERBUCK (Cobus defassa).

Defassa, Abyssinian.
Gŭrŭmes, Galla.
Nsama, Waganda.

Pior, Dinka.

Katambur, Sudani.

Kuru, Swahili.

Distinguished from the typical waterbuck by the general presence of a large white patch on the lower part of the buttocks, instead of a white elliptical ring extending higher up. Several local races of this species have been named. Among these, the West African or sing-sing (C. d. unctuosus), of Senegal, Nigeria, etc., is characterised by its rufous colour and the small amount of white in the region of the eye; Crawshay's defassa (C. d. crawshayi), from Nyasaland, has a dusky coloration and shorter horns; while in the Angola defassa (C. d. penricei), from the interior of Benguela, Angola, the general colour is so dark as to appear almost black at a distance. Then follows the typical Abyssinian defassa (C. d. typicus), from Western Abyssinia, but generally stated to extend through Sennar, Kordofan, and the valley of the White

Nile to British and German East Africa. The ears are longer and more pointed, and there is more white in the region of the eye than in the preceding races; the general colour being brownish rufous. Nearly allied are *C. d. matschiei* of Lake Abaya and *C. d. ugandæ*, of Uganda; the latter characterised by its bright rufous colour, especially on the forehead, and having the finest horns of all. Many other names have been given to local forms.

A.—ABYSSINIAN DEFASSA (C. defassa typicus).1

Length on front.	Circum- ference.	Tip to Tip.	Locality.		Owner.
341	81	18	White Nile .	:	G. W. Egerton.
$33\frac{1}{2}$			Bahr-el-Ghazal .		A. L. Butler.
$-33\frac{1}{2}$	81/2	$32\frac{1}{2}$	G.E. Africa .		S. E. White.
$33\frac{1}{4}$	81	252	Sudan		Capt. C. E. Hills.
$33\frac{1}{4}$	$8\frac{1}{2}$	194	Pibor River .		Capt. H. V. Venables Kyrke.
33	8	17	Sudan		Lord Desborough.
33	9	$31\frac{1}{2}$	East Africa .		J. Jay White.
324	83	22	Do		Hon. H. Brougham.
$32\frac{3}{4}$	81/2	$2I\frac{1}{4}$	Sudan , .		N. C. Cockburn.
321	81	181	Bahr-el-Ghazal .		R. Colville.
$32\frac{1}{2}$	9	18 3	Do.		Capt. E. P. Blencowe.
$32\frac{1}{2}$	83	254	Do		Sir Robert Harvey, Bart.
$32\frac{1}{2}$	81	18	Sudan		Major P. M. Dove.
$32\frac{1}{4}$	$8\frac{3}{4}$	$20\frac{1}{4}$	Do		A. J. Grieve.
321	85	30	East Africa .		Baron M. de Rothschild.
321	83	$24\frac{3}{4}$	Dinder Valley .		C. E. Russell.
321	91	$17\frac{3}{4}$	Abyssinia Border		Capt. J. A. Pollock.
321	8	$20\frac{1}{2}$	Sudan		LieutGen. Sir B. T. Mahon.
32	9	$22\frac{1}{2}$	Bahr-el-Ghazal .		LieutCol. G. Christian.
32	9	20	Sudan		Major C. S. Cumberland.
32	9	$26\frac{3}{4}$	Do		C. E. Oakley.
314	83	$16\frac{1}{2}$	Do		Capt. J. P. V. Hawksley.
311	8	I 5 ½	Do		F. W. Greswolde-Williams.
318	8	20_{4}^{3}	Do		S. H. Whitbread.
314	101	$22\frac{3}{4}$	East Africa .		E. H. Litchfield.
31‡	93	II $\frac{3}{4}$	Do		Major G. A. Swinton Home.
31‡	71	24	Sudan		Capt. E. C. Hamilton.
31	9	20	East Africa .		B. Dominick.
31	81/2	$17\frac{1}{2}$	Sudan		Earl of Kingston.
31	$8\frac{1}{2}$	143	Do		LieutCol. J. W. Yardley.
31	$9\frac{3}{4}$	185	East Africa .		N. E. F. Corbet.
303	$8\frac{1}{2}$	34	Sudan		W. F. Wailes-Fairbairn.
304	$9\frac{1}{2}$	15	Do		E. M. Tabor.

⁻ Owner's measurements.

¹ Inclusive of the large number of local forms named by Dr. Matschie.

Length on front.	Circum- ference.	Tip to Tip.	Locali	ty.		Owner.
30 3	ΙΙ	$28\frac{1}{2}$	East Africa			W. N. McMillan.
303	10	I23	Do.			Duke of Alba.
30 ³ / ₄	101	2 0 $\frac{3}{4}$	Do.			H. Sampson.
30₹	$8\frac{1}{2}$	24	Dinder Valley			Lord Villiers.
303	83	20	Sudan .			Capt. Lord R. Innes-Ker.
$30\frac{1}{2}$	83	2 I	?			N. E. Waterfield.
30½	10	16	East Africa			H. G. Watson.
$30\frac{1}{2}$	$8\frac{1}{2}$	$17\frac{1}{2}$	Sudan .			W. D. Roberts.
$30\frac{1}{2}$	83	$9\frac{1}{2}$	Do			N. Macklin.
$30\frac{1}{2}$	91	$15\frac{1}{2}$	Do			Major F. F. Carroll.
$30\frac{1}{2}$	83	25	East Africa			Earl of Warwick.
30½	95	16	Do.			Capt. H. C. S. Ashton.
301/2	91	144	Do.			J. G. Millais.
$30\frac{1}{2}$	81	192	Sudan .			Major R. M. Sanders.
301	$8\frac{1}{2}$	28 3	Do			R. H. Willan.
301	8	$18\frac{1}{2}$	Do			Col. A. Colville.
30‡	8	$19\frac{1}{2}$	Do			W. Mure.
301	10	21 ³ / ₄	East Africa			Gerard Buxton.
30‡	$9\frac{1}{2}$	138	Do.			Capt. R. Clemm.
301	93	$12\frac{1}{2}$	Do.			G. P. L. Cosens.
30	81	18	Sudan .			R. McD. Hawker.
30	$8\frac{1}{2}$	301/2	Do			Capt. O. C. Downes.
30	$8\frac{1}{2}$	21	Do			Capt. G. S. Nickerson.
30	83	16	Do			Capt. H. Craufurd.
30	9 '	I 2	East Africa			Duke of Medinaceli.
30	$10\frac{1}{4}$	15	Do.			R. B. Loder.
30	$9\frac{1}{2}$	18	Do.			Sutton Timmis.
30	8	101	Do.			H. Fowler.
30	81	$21\frac{1}{4}$	Sudan .			C. C. Branch.
30	$9\frac{3}{4}$	12	Do			W. R. Rhinelander Stewart.
29 ³ / ₄	$9\frac{1}{2}$	$14\frac{1}{2}$	East Africa			S. S. Steel.
293	$9\frac{1}{4}$	201	Do.			A. G. Murray Smith.
29 3	$8\frac{1}{2}$	$2I\frac{1}{2}$	Do.			F. C. Havemeyer.
293	834	151	Sudan .			Major A. J. B. Percival.
$29\frac{3}{4}$	83	18	Do			Capt. E. S. Stephenson.
29 3	8‡	12	Do.			G. Munn.
29 ³ / ₄	$8\frac{3}{4}$	$16\frac{3}{4}$	Do	•		C. A. Munn.
29∄	81	$2I\frac{1}{2}$	Do			Capt. R. F. Balfour.
$29\frac{3}{4}$	$9\frac{1}{4}$	231	Do			W. H. Lindsay.
29½	83	17	Do			Capt. C. Leigh.
$29\frac{1}{2}$	83	18 <u>5</u>	Do			Capt. the Hon. M. P. Macnaghten.
$29\frac{1}{2}$	$9\frac{1}{2}$	18 <u>3</u>	Do			Capt. J. G. A. Massy.
$29\frac{1}{2}$	10	20	East Africa			O. Mosley.
$29\frac{1}{2}$	9	$19\frac{1}{2}$	Do.			G. P. Gough.
$29\frac{1}{2}$	834	15	Do.			W. Sewall.
29½	10	I 5 ½	Do.			Capt. M. L. Pears.

Length on front.	Circum- ference.	Tip to Tip.		Loca	lity.		Owner.
292	9	171	East Afr	ica			A. Vonwiller.
29½	$9\frac{1}{2}$	193	Do.				G. de P. Colvile.
$29\frac{1}{2}$	9	22	Sudan				Major C. P. B. Wood.
$29\frac{1}{2}$	8	21	Do.				C. R. Gurney.
29불	7 ≩	33	Do.				Major the Hon. H. Fraser.
29 1	81	$16\frac{1}{2}$	Do.				F. L. Slade.
291	91	24	Do.				Capt. P. M. Larken.
291	9 8	19	Do.				Norman B. Smith.
291	8	103	Do.				H. W. Thornton.
291	9	$21\frac{1}{2}$	Do.				A. Robinson.
291	$8\frac{1}{2}$	$23\frac{1}{4}$	Do.				C. D. Eyre.
291	9	17	East Afr	ica			Sir Kenneth Crossley.
29 ¹ / _‡	9	$19\frac{1}{2}$	Do.				Viscount Ennismore.
$29\frac{1}{4}$	$9\frac{1}{2}$	21 3	Do.				Sir H. Seton Karr.

B.—UGANDA DEFASSA (C. defassa ugandæ).

Length on front.	Circum- ference.	Tip to Tip.	Local	lity.			Owner.
37 ⁸	83	258	Kivu District				Tervueren Museum. (See illustration.)
363	9 ³ 8	36	Nr. Lake Albe	rt Ed	ward		A. F. R. Wollaston.
$36\frac{3}{4}$	9	$20\frac{1}{2}$	Do.				F. A. Knowles.
36 3	$8\frac{1}{2}$	$19\frac{1}{2}$	Semliki Valley				Duke of Peneranda.
$^{3}35\frac{1}{2}$	$10\frac{1}{2}$	$22\frac{1}{2}$	Uganda .				Major de Courcy Ireland.
35	$9\frac{1}{4}$	$29\frac{3}{4}$	Lake George				Col. C. F. Blane.
$34\frac{3}{4}$	$9\frac{1}{2}$	$22\frac{1}{2}$	Do				Dr. H. B. Owen.
34 \$	$9\frac{1}{2}$	$35\frac{1}{2}$	Semliki Valley				The late G. G. Longden.
$34\frac{1}{2}$	85	27	Uganda .				British Museum (Sir F. J. Jackson).
34 ³	$10\frac{1}{8}$	181	Edward Nyanza	l.			Major P. H. G. Powell-Cotton.
341	IO	32	Uganda .				Capt. R. H. Leeke.
$34\frac{1}{4}$	101	$23\frac{1}{2}$	Semliki Valley				Hon. G. Legge.
344	$9\frac{1}{2}$	314	Uganda .				Douglas M'Douall.
34 ¹ / ₈	83	201	Toru, Uganda	•		٠	British Museum (Sir H. H. Johnston).
33 ⁵ / ₈	81	$27\frac{3}{8}$	Do.				Sir F. J. Jackson.
$33\frac{1}{2}$	9^{3}_{4}	17	Lado				Major P. H. G. Powell-Cotton.
331	IO	$29\frac{3}{4}$	Semliki Valley				G. Blaine.
334	9	$19\frac{1}{2}$	Uganda .				E. Canaple.
$33\frac{1}{4}$	$9\frac{1}{2}$	$22\frac{3}{4}$	Do				Hon. Walter Rothschild.
32 ³	9	183	Do				H. Twyford.
$32\frac{1}{2}$	81	$27\frac{3}{4}$	Semliki Valley				Col. R. Bright.
321	102	18	E. Congo .				Hon. M. W. Elphinstone.
321	9	192	Edward Nyanza				Mrs. P. H. G. Powell-Cotton.
32	$9\frac{3}{4}$	22	Semliki Valley				R. de la Huerta.
318	9	21	Do.				Major R. A. Markham.
317	10	26‡	Do.				D. Carruthers.
314	91/2	2 I	Gondokoro			٠	Major A. W. Jennings Bramly.

¹ In collection of Sir Hy. E. M. James.

C.—RHODESIAN DEFASSA (C. defassa crawshayi).

Idcitwi, Barotsi. Ingonduma, Matoko.

Length on front.	Circum- ference.	Tip to Tip.	Locality.	Owner.		
2 9	9	22	Lake Mweru .	. Hon. Walter Rothschild.		
27 ³ / ₄	81	20	N.W. Rhodesia	. Capt. C. G. Leslie.		
$27\frac{1}{2}$	7출	$12\frac{1}{2}$	N.E. Rhodesia.	. G. Sandeman.		
$27\frac{1}{2}$	9	12	Do	. P. M. Stewart.		
$27\frac{1}{4}$	8	16 3	Lake Mweru .	. K. C. North.		
27	91	$17\frac{1}{2}$	Do	. Capt. H. E. Hambro.		
27	$9\frac{3}{4}$	12	N.W. Rhodesia	. Capt. J. F. Laycock.		
27	83	175	N.E. Rhodesia.	. W. A. Conduitt.		
26 7	83	134	Do	. Capt. L. E. H. Molyneux-Seel		
26 ³	9	$13\frac{1}{2}$	Nyasaland .	. L. H. Cripps.		
263	9	151	N.E. Rhodesia .	. Major L. Boyd-Moss.		

D.—WESTERN DEFASSA, or SING-SING (C. defassa unctuosus).

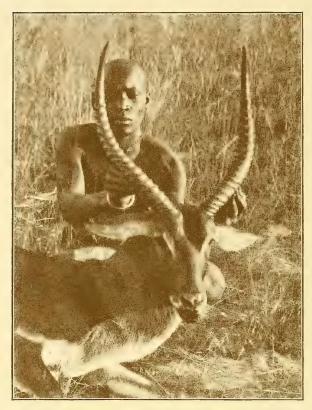
Dadoko and Gwombaza, Hausa. Sing-sing, Gambian.

Height at shoulder, 47 to 48 ins.

Length on front.	Circum- ference.	Tip to Tip.	Loc	ality.		Owner.
311	101	194	Sierra Leone			C. Cary Barnard.
293	85	$21\frac{3}{4}$	N. Nigeria			Capt. N. K. Street.
$29\frac{1}{2}$	74	23	Nigeria .			MajGen. P. S. Wilkinson.
$29\frac{1}{2}$	81	$17\frac{1}{2}$	Do			R. Marmon.
$28\frac{1}{2}$	81	194	Do.			Capt. A. C. Aubin.
281	8	184	Do			Capt. H. T. G. Moore.
28	8	171	Sierra Leone			Major W. Gillman.
$27\frac{3}{4}$	8	15	Gambia .			H. North.
27 5	8‡	17.‡	Nigeria .			W. F. Gowers.
$27\frac{1}{2}$	$7\frac{1}{2}$	12	Do			Lady Constance Stewart Richardson.
27	8	141	Do			Capt. W. H. Wilkin.
26½	8	171	Senegambia			G. Fenwick Owen.
26‡	7	194	Gold Coast			Capt. P. J. Mackesy.
26	$7\frac{1}{2}$	191	Nigeria .		٠	Major E. M. Baker.

E.—ANGOLA DEFASSA (C. defassa penricei).

Length on front.	Circum- ference.	Tip to Tip.	Lo	cality.			Owner.
29	83	181	Benguela.				G. W. Penrice.
283	71	$9\frac{3}{4}$	Do				Major Boyd A. Cuninghame.
251	83	103	Do				W. C. Neilson.
$24\frac{1}{2}$	8	9s	Do				Hon. Walter Rothschild.
			OWNER'S	ME	ASU	REM	MENTS
281	83	20	Benguela.			٠	E. P. Cooper.
281	81	I I ½	Do				A. Ohlsson.



Head and Fore-quarters of Lechwe. From a photograph by Mr. Poulett-Weatherley.

The LECHWE (Cobus [Onotragus] leche).

Umbundu, Angola.
Lechwi, Barotsi and Ngami.
Mumembi (male), Ngia (female),
Chilala and Chibisa.

Lechi or Li-gwi, Makololo. Inya, Masubia. Unya, Makuba. Bainanja, Mushu Kulumbwi.

Nainja, Chila.

In this antelope the horns are relatively long, considerably exceeding twice the length of the head, and show a tendency to a double curvature; the front of the fore-legs is black, and the hair is long and coarse. Height at shoulder, 40 or 41 inches.

Like the puku, this antelope was discovered by Livingstone and his companions Oswell and Murray during their journey to Lake Ngami in 1849. In point of size it approximates to the true waterbucks.

The general colour is fulvous, of a lighter tint than in the Uganda kob.

Seldom found very far from water, this antelope is most abundant in the lagoons and swamps formed by the annual rising of the Upper Zambesi, the Botletli, Chobi, Tamulakan, and other rivers of the interior, in localities where the surrounding flats are inundated for some part of the year. Lechwe seldom venture into the deep rivers from fear of the crocodiles, but frequent the reed-beds, shallow lagoons, and flooded flats, and in the less accessible regions frequently occur in vast herds. Excellent swimmers they progress by a succession of splashing bounds at great speed through the lagoons and shallows. They are extremely tenacious of life.

Distribution.—Zambesia, Barotsiland, and Nyasaland.

Length on front.	Circum- ference.	Tip to Tip.	Locality.		Owner.
34 ⁷ / ₈	$8\frac{1}{2}$	148	N.W. Rhodesia		O. C. Bevan.
33	9	191	Do.		Major G. A. Swinton Home.
33	$8\frac{1}{2}$	26	Do.		Major P. G. A. Cox.
32 ³ / ₈	8	291	Do.		R. C. Wood.
321	7 3	193	Do.		G. L. Harrison.
321	81	181	Do.		Earl of Kingston.
321	$9\frac{1}{4}$	26½	Do.		C. M. Rolker.
$31\frac{1}{2}$	8	22	Do.		Hon. Guy Wilson.
31½	7	18	Do.		Col. C. Harding.
31½	8	19§	Do.		Capt. A. Willis.
31½	83	$21\frac{1}{2}$	Do.		Major G. J. Fitzgerald.
311	83	$24\frac{1}{2}$	Do.		Capt. F. W. Reichwald.
314	81	221	Do.		Capt. F. O. Grenfell.
31	8	$18\frac{1}{2}$	Do.		A. de L. Long.
31	81	$23\frac{1}{4}$	Do.		W. H. Rawnsley.
31	834	13	Do.		P. K. Glazebrook.
303	8	$25\frac{1}{4}$	Do.		G. de P. Colvile.
$30\frac{1}{2}$	8	183	Do.		LieutCol. R. W. R. Barnes.
301/2	7 8	25 ³ 4	Do.		H. M. P. Hewett.
302	81	19‡	Do.		Sir Edmund G. Loder, Bart.
301	8	$20\frac{3}{4}$	Do.		Capt. R. A. McClymont.
301	$8\frac{1}{2}$	$2I_{\frac{1}{4}}^{\frac{1}{4}}$	Do.		G. F. Watherston.

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Length on front.	Circum- ference.	Tip to Tip.	Locality.			Owner.
301	8	$19\frac{1}{2}$	N.W. Rhodesia			Capt. Viscount Bury.
30	8	$25\frac{3}{4}$	Do.			V. F. Bishop.
30	81	$20\frac{1}{2}$	Nyasaland.			J. H. Hayes.
29 ³ / ₄	$8\frac{1}{2}$	183	N.W. Rhodesia			Capt. G. M. Lumsden.
2 9 ³ / ₄	8	20 ³ / ₄	Do.			Duke of Westminster.
$29\frac{1}{2}$	8‡	174	Do.			B. Ryan.
29 ³ / ₈	73	154	Do.			Sir J. Walton, Bart.
29 ¹ / ₄	8‡	$20\frac{1}{2}$	Do.			Major J. Carden.
29	8	191	Do.			P. B. Vander Byl.
29	8	$16\frac{1}{2}$	Do.			Col. Lord Douglas Compton.
28 3	8	28½	Do.			R. T. Coryndon.
284	7‡	$\mathbf{I} 2 \frac{1}{2}$	Do.			H. H. Williams.
28 3	8	18	Do.			Capt. P. R. Bald.
28 3	81	16	Do.			T. D. M. Cardeza.
283	$7\frac{1}{2}$	21	Do.			Capt. the Hon. G. H. Douglas-
2 83/4	8	28	Do.			Pennant. Capt. J. F. Laycock.
2 83	81	$26\frac{1}{2}$	Do.			Hon. Mrs. Guy Wilson.
$28\frac{1}{2}$	$6\frac{1}{2}$	18	Do.			Dr. Russell.
$28\frac{1}{2}$	8	. I7 ³ / ₄	Do.			R. D. Waterhouse.
28	$7\frac{1}{2}$	17‡	Do.			R. Beaumont.
274	8	6	Ngamiland.			A. G. Stigand.
$27\frac{1}{2}$	$7\frac{1}{2}$	$14\frac{1}{2}$	Do			F. T. Garbutt.
$27\frac{1}{2}$	103	19\frac{1}{8}	Chobi Valley			British Museum (F. C. Selous).
271/2	8	$20\frac{1}{2}$	N.W. Rhodesia			Lord H. Seymour.
$27\frac{1}{2}$	8	$\scriptstyle \rm I7\frac{1}{2}$	Chobi Valley			R. Campbell Heathcote.
$27\frac{1}{2}$	83	I 2	Do.			Capt. C. G. Leslie.
		0.	WNER'S MEA	SUR	ΕM	IENTS.
3415	81	17	N.W. Rhodesia			A. Faulkener.
$33\frac{1}{2}$	7	26 <u>3</u>	Lake Bangweold			Poulett-Weatherley.

In the *Field* of September 17, 1910 (vol. cxvi. p. 551), Mr. H. W. Martin states that he once came across a herd of white lechwe with black points, of which one was killed, but the skin subsequently lost. The locality is not mentioned.

27 N.W. Rhodesia . . Major W. Q. Winwood.



Head of Black Lechwe.

The BLACK LECHWE (Cobus [Onotragus] smithemani).

Nearly allied to the last, of which it may be only a local race, but the upper-parts of adult males blackish brown, and the horns with a more distinct double curvature.

Distribution.—Lake Mweru district, and thence to Lake Bangweolo, North-east Rhodesia. A North Rhodesian black lechwe has been separated as C. robertsi.

Length on front.	Circum- ference.	Tip to Tip.	Locality.		Owner.
298	75	19	N.E. Rhodesia		J. E. Hughes.
251	7	191	Do.		P. M. Stewart.
-24 ³ / ₈	71	15	Do.		C. S. Mann.
$24\frac{1}{4}$	7	$14\frac{1}{2}$	Lake Bangweolo		Claude Francis.
234	7½	20 ³ / ₄	Do.		Earl of Kingston.
$23\frac{1}{2}$	71/2	128	Do.		Major L. Boyd-Moss.
$23\frac{1}{2}$	734 634	134	Do.		Capt. S. H. Christy.
$23\frac{1}{2}$	6 <u>3</u>	$22\frac{3}{4}$	Do.		J. Turner.
231	7幸	I I ½	Do.		Hon. W. Guinness.
234	7	$13\frac{1}{2}$	Do.		W. A. Conduitt.
231	5 7	117	Do.		Hon. Walter Rothschild.
234	$6\frac{1}{4}$	17	Do.		P. K. Glazebrook.
$22\frac{3}{4}$	$6\frac{1}{2}$	134	N.E. Rhodesia		R. Hayne.
$22\frac{3}{4}$	7幸	171	Do.		A. de L. Long.
22 ³ / ₄	$6\frac{5}{8}$	111	Do.		G. F. Watherston.
22 ³ / ₄	63	I 5 1/2	Do.		F. H. Melland.
22	7	16	Do.		Capt. J. Harington.
22	7½	II 3	Do.		O. L. Beringer.

⁻ Owner's measurements.



Head of Mrs. Gray's Lechwe.

MRS. GRAY'S LECHWE (Cobus [Onotragus] maria).

This handsome species is distinguished by the long, slender, doubly curved horns, ridged nearly to the tips, and the blackish brown body-colour of the old bucks; the dark colour being relieved by a whitish patch in front of the withers, the yellowish white ears, a yellowish white patch in front of and behind each eye, and the yellowish muzzle, chin, and lower part of the throat. The limbs and much of the underparts are wholly dark-coloured. Coat long and rough. Height at shoulder, about 38 inches. Young males and females of all ages are chestnut-coloured.

It seems not improbable that Mrs. Gray's lechwe is the supreme development of the lechwe stock (with which it agrees in its long, rough coat); thus occupying a position analogous to that held by the white-eared kob as compared with Buffon's kob. The black lechwe forms in some respect a connecting link between the true lechwe and

the present animal, in which the extreme blackness is doubtless due to the hot, moist climate of the Bahr-el-Ghazal.

Distribution.—The swamps bordering the White Nile and its tributaries.

Length on front.	Circum- ference.	Tip to Tip.	Locality.	Owner.
$34\frac{1}{4}$	$6\frac{7}{8}$	24	Sudan	J. C. Phillips.
-33½			Do	Lieut. W. Scott-Hill, R.N.
32\frac{3}{4}	64	18	Do. :	Col. A. Colville.
-32 ³ / ₈			Do	C. S. Mann.
32‡	7 1	16‡	Do	Sir Abe Bailey.
32	$6\frac{7}{8}$		Near Junction of Bahr- el-Gebel and White Nile	
318	6‡	19‡	?	R. H. Willan.
$-31\frac{1}{4}$	7홍	$18\frac{1}{2}$	Bahr-el-Ghazal	Sir W. Garstin.
31 1/8	63	11 3	Do	Norman B. Smith.
31	$7\frac{1}{2}$	$19\frac{1}{2}$	Sobat-Pibor District .	Capt. J. A. Pollock.
31	61	$2I\frac{1}{2}$?	Col. J. J. Asser.
303	7	211	Bahr-el-Ghazal	Capt. A. H. Vivian.
30 5	7	14	Do	Capt. H. Gordon.
30½	7	9	Do	R. A. Colvin.
301	7	$14\frac{3}{4}$	Bahr-el-Zaref	Capt. C. E. Hills.
30	7	$14\frac{1}{2}$	Do	Major W. H. Drake.
30	$6\frac{1}{2}$	${\rm I}4\tfrac{1}{2}$	Do	H. St. C. Garrood.
$29\frac{3}{4}$	$6\frac{1}{2}$	101	White Nile	Major P. M. Dove.
29 ³ / ₄	7 5	174	Do	Countess of Sefton.
29 ⁸ / ₄	6‡	12	Do	Hon. Walter Rothschild.
29½	74	16	Do	C. H. Goschen.
291	$7\frac{1}{8}$	19‡	Do	Major A. W. Jennings Bramly.
29½	$7\frac{1}{2}$		Do	N. C. Cockburn.
291	71	171	Sudan	Capt. C. Hankey.
291	7	$20\frac{3}{4}$	Do	Duke of Alba.
291	6 §	125	Do	G. L. Wingfield.
29	$7\frac{3}{4}$	$12\frac{3}{4}$	Do	Col. E. G. T. Bainbridge.
29	7	16	Tonga Island, White	Col. W. Hayes-Sadler.
29	7	$24\frac{1}{2}$	Nile Sudan	G. W. Egerton.

⁻ Owner's measurements.



Head of Western Kob. Shot by Lady Constance Stewart Richardson in Nigeria.

THE KOB (Cobus [Adenota] cob).

Maria, Hausa.

There is little doubt of the existence of a more or less complete gradation from the wholly fulvous typical or Buffon's kob to the white-eared kob, in which the general colour of old bucks is blackish brown. The simpler form and smaller size of the horns affords a sufficient distinction from *C. maria*.

Distribution.—The Forest Zone and Swamps of the White Nile.

A.—WESTERN RACES (C. cob typicus), etc.1

This race has the back of the ears rufous like the body: the horns are less than twice the length of the head, the hair is short, and the front of the fore-legs black. The approximate height at the shoulder is from 32 to 35 inches.

Distribution.—Gambia to Nigeria and Lake Chad district.

¹ Several allied races have been described from the Lake Chad (Shari) district, which are included under the present heading.

Length on front.	Circum- ference.	Tip to Tip.	Locality.		Owner.
$22\frac{1}{4}$	7	$11\frac{3}{4}$	N. Nigeria .		Major E. M. Baker.
22 1 /8	7 ³	74	Do		Capt. G. Bonham-Carter.
22	$6\frac{1}{2}$	113	Do		E. H. M. Bennett.
213	7축	IO	Do		J. Goold Adams.
$21\frac{1}{2}$	74	91	Do		Capt. L. C. Brodie.
21	$6\frac{1}{2}$	81	Do		Dr. C. W. O'Keefe.
21	6	141	Do		Lady Constance Stewart Richardson.
20 5	$6\frac{1}{2}$	$9\frac{3}{4}$	French Congo		W. S. Race.
201	634	$10\frac{1}{2}$	Nigeria		Capt. W. H. Wilkin.
20 ¹ / ₂	74	10	Lake Chad .		Capt. L. C. Jackson.
$-20\frac{1}{2}$	7	$7\frac{1}{2}$	Nigeria		Capt. P. Chapman.
201	61	121	Do		Capt. A. B. Baillie-Hamilton.
20	7	7	Do		W. F. Gowers.
20	7	7∄	Do		Sir E. Stewart Richardson, Bart.
20	65	63	Lake Chad .		Sir Edmund G. Loder, Bart.
20	78	$14\frac{1}{2}$	Do		Major J. B. Cockburn.
20	7	$10\frac{1}{8}$	Nigeria		C. S. Burnett.
193	7	$3\frac{1}{4}$	Do		Major Lord J. S. Cavendish.
193	7 8	9	Lake Chad .		MajGen. T. L. N. Morland.
193	678	74	Nigeria		Major A. H. Festing.
19½	$6\frac{1}{2}$	8	Do		Major T. Astley Cubitt.
192	64	$6\frac{1}{2}$	Do		Capt. R. W. Fox.
19½	6	$14\frac{1}{2}$	N. Nigeria .		L. C. Murray.
19½	$6\frac{1}{4}$	$5\frac{1}{2}$	S. Nigeria .		Capt. W. V. Nugent.
191	7	87.	N. Nigeria .		C. S. Mann.
19‡	6	11 <u>1</u> 8	Do		Dr. G. J. Pirie.
19‡	$6\frac{1}{4}$	$6\frac{1}{2}$	Do		Capt. F. E. Bissell.
19‡	$6\frac{3}{4}$	13	Lake Chad .		Capt. J. C. Parker.
194	68	ΙΙ	N. Nigeria .		Major C. A. Booth.
19	63	$13\frac{1}{2}$	Lake Chad .		Capt. A. Noel Woods.
19	$6\frac{1}{2}$	11	Do		Capt. S. B. B. Dyer.
19	63	$8\frac{3}{4}$	Nigeria		Capt. G. C. Kelly.
19	$6\frac{1}{2}$	$9\frac{3}{4}$	Do		D. W. Pawle.
184	6	58 €	Gambia		G. Blaine.
17g	5₹	$6\frac{1}{8}$	S. Nigeria .		C. E. Stewart.
$17\frac{1}{2}$	$6\frac{1}{2}$	$10\frac{3}{4}$	Sierra Leone .		C. Cary Barnard.
174	6	83	Portuguese Guir	nea.	M. V. Hay.
16 7	6	$10\frac{3}{4}$	Sierra Leone .		Major W. Gillman.
16§	6.1	95	Portuguese Guir	nea.	Major P. H. G. Powell-Cotton.
152	6	7 ³ / ₄	Senegambia .		G. Fenwick Owen.
15	$5\frac{1}{2}$	54	Gold Coast .		Capt. G. H. Hastings.

⁻ Owner's measurements.



Skull and Horns of Uganda Kob.

B.—UGANDA RACE (Cobus cob thomasi).

Nsuna, N'Sunu, or Sunu, Waganda.

From the typical Buffon's kob the eastern or Uganda race is distinguished mainly by its superior size, and the presence of a complete white ring round each eye, instead of having only a white line above the same. General colour rich fulvous, with the muzzle, lips, chin, under-parts, and inner surfaces of upper portion of fore-legs and thighs white; front of fore-legs with a black line, and hind-legs with a similar line, which does not, however, ascend within some distance of the hocks. Height at shoulder, about 35 inches.

Distribution.—East Africa, from Kavirondo to Uganda.

Length on front.	Circum- ference.	Tip to Tip.	Local	ity.		Owner.
-241	$7\frac{1}{8}$	I 2	Wadelai			Major G. A. S. Cape.
$23\frac{1}{2}$	7‡	6 7	Mruli .			LieutCol. J. Ponsonby.

⁻ Owner's measurements

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Length on front.	Circum- ference.	Tip to Tip.	Local	ity.		Owner.
-23	$7\frac{1}{2}$	167	Edward Nya	nza		Mrs. P. H. G. Powell-Cotton.
22 ³ / ₄	7ᡱ	I 5½	Uganda .		. 1	P. F. Hadow.
22 ³ / ₄	7 ½	11½	Do.			Major C. A. Sykes.
221/2	7 ³ ±	141	Do.			Capt. W. S. Nicolson.
$22\frac{1}{2}$	$6\frac{1}{2}$	$10\frac{1}{3}$	Albert Nyan	za		Capt. P. Garrard.
221	81/2	15½	Uganda .			Major R. H. Price.
221	$6\frac{3}{4}$	$10\frac{3}{4}$	Do			Dr. Shircore.
22	$7\frac{1}{2}$	I23	Do.			Capt. A. J. Whittle.
22	7	$7\frac{3}{4}$	Do.			P. B. Vander Byl.
21 7 8	7	$15\frac{3}{4}$	Do.			Capt. P. M. Larken.
21 ³ / ₄	$6\frac{7}{8}$	I 2 $\frac{7}{8}$	Do.			Col. C. F. Blane,
213	$7\frac{3}{4}$	9	Do.			Major R. A. Markham.
213	63	6	Do.			G. C. Slacke.
$2I\frac{1}{2}$	$7\frac{1}{2}$	102	Do.			Sir F. J. Jackson.
$21\frac{1}{2}$	8	$9^{\frac{3}{4}}$	Do.			Douglas M'Douall.
211	$6\frac{3}{4}$	13	Do.			Sir F. J. Jackson.
211	65	$7\frac{1}{2}$	Do.			R. de la Huerta.
211	71	14	Do.			Miss C. Buxton.
-21½	$7\frac{1}{2}$	13‡	Lado			Major P. H. G. Powell-Cotton.
218	7‡	7≩	Wadelai			LieutCol. M. L. Carleton.
21	63	5	Uganda			G. L. Harrison.
21	73	11	East Africa	•		F. C. Selous.
21	63	$14\frac{1}{2}$	Semliki Vall	ey		M. P. Lupton.
21	74	$9\frac{1}{2}$	Do.			R. E. Dent.

⁻ Owner's measurements.

C.—VAUGHAN'S RACE (Cobus cob vaughani).

Very similar to the last, but the general colour of old bucks at one season bright foxy red, much as in the typical race; the red extends on to the bases of the ears, and there is rather less white on the face than in the next race. Adult bucks may become more or less black at one season. Possibly the name *vaughani* will have to be replaced.

Distribution.—The south-western districts of the Bahr-el-Ghazal province.

Length on front.	Circum- ference.	Tip to Tip.	Locality.		Owner.
23	6	154	Nr. Wau .		Capt. L. D. Spencer.
2112	7‡	$9\frac{1}{2}$	Bahr-el-Ghazal		H. StC. Garrood.
201	$6\frac{1}{2}$	12	Do.		Major P. M. Dove.
201	7 ³	$8\frac{1}{2}$	Do.		G. L. Wingfield.
$20\frac{1}{4}$	$6\frac{1}{2}$	ΙΙ	Do.		C. Mathews.
20	$6\frac{3}{4}$	9 5	Do.		Major F. F. Carroll.
19‡	7	$11\frac{1}{2}$	Do.		Capt. P. E. Vaughan.
19	63/4	5½	Do.		J. C. Phillips.
181	63	7	Do.		Major J. L. J. Conry.
181	$6\frac{1}{4}$	83	Do.		Hon. Walter Rothschild.

D.—WHITE-EARED RACE (Cobus cob leucotis).

Hamaraia dyl, Sudani, Kala, Niam-Niam. /wil, Dinka and Shooli.

The old bucks of this race are of the same blackish-brown colour as those of *C. maria*, but have no light patch in front of the withers, and are further characterised by the ears, a large patch extending from the same to surround each eye, the muzzle, chin, upper portion of the throat, the under-parts, and portions of the inner and front surfaces of the limbs being pure white. The direction of the hair on the middle line of the back is reversed from the loins instead of from the middle of the back. Young bucks and females are red. Height at shoulder, about 34 or 35 inches.

Distribution.—The region of the Upper Nile, including the Sobat, Bahr-el-Ghazal, and their tributaries.

KOB 207



Head of White-eared Kob.

Length on front.	Circum- ference.	Tip to Tip.	Locality.		Owner.
1 24 ³ / ₄	74	11	Bahr-el-Ghazal .		Capt. J. P. V. Hawksley.
231	6‡	I 2 1	Do	٠	Major A. J. B. Percival.
231	6‡	10_8^8	White Nile		C. Bulpett.
231	63	111	Sobat-Pibor District	•	Capt. J. A. Pollock.
23	$6\frac{1}{2}$	10	White Nile		Capt. A. H. Vivian.
23	61	113	Bahr-el-Ghazal .		Sir Robert Harvey, Bart.
$22\frac{7}{8}$	$7\frac{1}{2}$	15 ³ / ₄	White Nile		Capt. G. L. Cameron.
22 $\frac{3}{4}$	$6\frac{3}{4}$	111	Do		W. H. Lindsay.
22 ¹ / ₄	6	10_8^5	Pibor District .		Capt. H. V. Venables Kyrke.
$22\frac{1}{4}$	54	II $\frac{1}{2}$	Sudan		E. M. Tabor.
22	$6\frac{1}{2}$	10	White Nile		F. W. Greswolde-Williams.
22	6	13	Do		Capt. A. Craufurd.
21 ³ / ₄	$6\frac{1}{2}$	13½	Do		Major J. H. Rivers.
213	6	142	Do		Lord Desborough.

¹ Determination provisional.

Length on front.	Circum- ference.	Tip to Tip.	Localit	ty.		Owner.
2 I $\frac{3}{4}$	$6\frac{1}{2}$	$9\frac{3}{4}$	White Nile .			E. C. Crispin.
2 I $\frac{3}{4}$	63	$8\frac{1}{2}$	Do			F. C. Selous.
2 I $\frac{3}{4}$	6‡	$7\frac{1}{2}$	Do			P. M. Tottenham.
21 ³ / ₄	6 7	13§	Do			F. L. Slade.
$2I\frac{1}{2}$	71	$12\frac{1}{4}$	Do			LieutGen. Sir B. T. Mahon.
2 I ½	7	I I ½	Do			H. Fitzroy.
$21\frac{1}{2}$	$6\frac{3}{4}$	I 2	Do			R. McD. Hawker.
2112	63	$10\frac{1}{4}$	Do			Capt. E. C. Hamilton.
$21\frac{1}{2}$	$6\frac{1}{2}$	7	Do			C. Bower Ismay.
2 I ½	$6\frac{1}{2}$	13	Do			C. de la Huerta.
2 I $\frac{1}{2}$	6	91	Do			C. C. Branch.
2 I $\frac{1}{2}$	$6\frac{3}{4}$	$7\frac{1}{2}$	Do			Major W. F. Sweny.
2 I ½	$7\frac{1}{2}$	121	Do			E. D. H. Tollemache.
2114	6	133	Do			Capt. G. Stewart.
$21\frac{1}{4}$	67/8	11	Do			Major W. Hayes-Sadler.
$2I\frac{1}{4}$	61	8	Do			Major R. M. Sanders.
2 I ½	$6\frac{1}{2}$	81/2	Do			Capt. H. R. Headlam.
211	$6\frac{1}{2}$	4	Do			W. R. Rhinelander Stewart.
$21\frac{1}{4}$	7	II $\frac{1}{2}$	Do			N. C. Cockburn.
211	$7\frac{1}{4}$	9 3	Do			G. Munn.
211	71 `	15	Do			Capt. R. G. C. Brock.
211	6	$11\frac{1}{2}$	Do			Duke of Alba.
211	63	$10\frac{1}{8}$	Do			G. L. Wingfield.
21	$6\frac{1}{2}$	83	Do			Capt. G. F. Pridham.
21	$6\frac{1}{2}$	$10\frac{1}{2}$	Do			J. H. Greathead.

E.—LODER'S PUKU (C. cob loderi).

Typified by the under-mentioned skull, but probably identical with a puku-like kob subsequently described as *Adenota pousarguesi*. Horns of a somewhat puku-like type.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.	Owner.
21	8	81	?	Sir Edmund G. Loder, Bart.

PUKU 209



Skull and Horns of Puku.

The PUKU (Cobus [Adenota] vardoni).

Impuku, Masubia. Muntinya, Barotsi. Puku, Ngami. Seūla, Chilala and Chibisa.

Sichisunu, Chila.

From the other small kobs with the back of the ears rufous, the puku is distinguishable at once by the uniformly foxy colour of the fore-legs, as well as by the greater length of the hair, especially in the region of the back and loins, where it has a tendency to curl. General colour reddish yellow. Height at shoulder, about 39 or 40 inches. Weight, about 190 lbs.

Distribution.—Chobi and Zambesi valleys, including Barotsiland, very common, and found in small herds of ten to twenty in North-west and North-east Rhodesia.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.	Owner.
$20\frac{3}{4}$	7 5	17	N.E. Rhodesia .	Hon. Walter Rothschild.
$20\frac{1}{2}$	$6\frac{3}{4}$	ΙΙ	N.W. Rhodesia.	Dr. Cole.
$-20\frac{1}{2}$	7	15	Do.	C. S. Mann.
$20\frac{1}{4}$	81/2	I 2 1/4	Lake Bangweolo	F. Smitheman.
20	$7\frac{3}{4}$	71	N.W. Rhodesia.	T. D. M. Cardeza.
19§	$7\frac{3}{4}$	$6\frac{7}{8}$	N.E. Rhodesia .	W. A. Conduitt.
19‡	$6\frac{1}{2}$	4	Do	H. Cookson.
194	$7\frac{1}{2}$	94	;	T. G. Davey.
198	$6\frac{3}{4}$	$8\frac{1}{2}$	3	J. Carr Saunders.
19	71	$5\frac{3}{4}$	N.W. Rhodesia .	Major J. Carden.
19	71	8	N.E. Rhodesia .	F. H. Melland.
-19	$7\frac{1}{2}$	6	Do	J. C. Phillips.
187	8	65	Do	Earl of Kingston.
183	63	81/2	N.W. Rhodesia.	R. T. Coryndon.
183	7	61/2	5	J. L. Drège.
183	6	6	Nyasaland	Dr. A. MacCarthy Morrogh.
$18\frac{1}{2}$	61	$9\frac{1}{4}$?	S. R. Price.
$18\frac{1}{2}$	$6\frac{1}{2}$	$4\frac{1}{2}$?	Sir Owen Philipps.
$18\frac{1}{2}$	7‡	73	N.E. Rhodesia .	Col. C. F. Blane.
18‡	7	83	5	W. H. Fountain.
181	$7\frac{1}{4}$	8	?	Capt. G. M. Spencer-Smith
181	7‡	$7\frac{1}{2}$	N.E. Rhodesia .	P. M. Stewart.
18	7	$9\frac{1}{2}$	N.W. Rhodesia.	Capt. H. E. Hambro.
18	7	I I 1 1	Do	Col. C. Harding.
18	78	6	Do	The late George Grey.
174	$6\frac{1}{2}$	$8\frac{1}{2}$	Do	Capt. A. L. Godman.
173	6	$7\frac{1}{2}$	Do.	J. Ripley.
173	71	8	Ulanga Valley .	R. Berridge.
175	6‡	$9\frac{1}{2}$	N.E. Rhodesia .	J. Turner.
$17\frac{1}{2}$	63	$7\frac{1}{4}$	Tanganyika Plateau	Claude Francis.
$17\frac{1}{2}$	7 1 8	55	N.E. Rhodesia.	Col. A. Colville.
17½	71	14	N.W. Rhodesia	Capt. H. L. Archer-Houblon.
$17\frac{1}{2}$	7	$12\frac{5}{8}$	Do	Major A. H. Daukes.
171	7	7	Do	E. McClellan.
17½	$7\frac{1}{2}$	54	Do	J. H. Leche.
17½	63	8	Do	E. Fowler.
♀ 5 ⁵ 8	3 5	5‡	Loru Valley .	J. Gibson Hall.

⁻ Owner's measurements.



Head of Vaal Rhebok.

The GREY or VAAL RHEBOK (Pelea capreolus).

Vaal Rhebok, Cape Dutch.
Iliza, Swazi.

Pshiatla, Basuto.
Peeli, Bechuana.

The short, upright, straight, and slender horns, together with the somewhat woolly nature of the hair, serve to differentiate the vaal rhebok from the antelopes of the kindred genera. The tail, like that of the reedbucks, is moderately long and bushy; the ears are tall and narrow; the build is slight and graceful; and the general colour is uniformly pale grey, tending somewhat to fawn on the head and limbs. Height at shoulder, about 28 inches in females and 30 or 31 inches in males. The chief distinctions between this antelope and reedbuck are the form of the horns and the absence of the bare patches below the ears.

Distribution.—The open hilly districts of Africa south of the Zambesi. In the mountain ranges of the eastern and northern districts of Cape Colony, and thence onwards to the Zambesi, the vaal rhebok

affords good sport; and although its somewhat stiff and stilty appearance is not at first suggestive of unusual activity, yet the pace and regularity with which a party of these antelopes will race up the steep flank of a mountain are wonderful. A peculiar feature of the vaal rhebok is the soft and woolly nature of the grey coat; the horns afford insignificant trophies, and the flesh is of poor quality.

Length on front.	Circum- ference.	Tip to Tip.	Locality.	Owner.
11½	$2\frac{1}{2}$	$4\frac{1}{2}$	3	Sir Owen Philipps.
$10\frac{7}{3}$	2	$2\frac{1}{2}$	Basutoland	Sir Abe Bailey.
IO 1 6	$2\frac{1}{8}$	3	Cape Colony .	H. Hodgson.
1018	2	$3\frac{7}{8}$	Near Middelburg	Major E. H. E. Abadie.
91	$2\frac{1}{2}$	$2\frac{3}{4}$?	Dr. Oakeshott.
9	25	2 5 8	?	Mr. Justice Hopley.
85	$2\frac{5}{8}$	$2\frac{1}{2}$	Cape Colony .	R. H. Venables Kyrke.
85	$2\frac{1}{2}$	$2\frac{5}{8}$	South Africa .	British Museum (Dr. Burchell).
81	$2\frac{1}{2}$	2	?	G. Richards.
8	$2\frac{1}{4}$	$2\frac{3}{4}$?	Capt. R. Meinertzhagen.
8	2	$4\frac{1}{8}$?	R. E. Critchley-Salmonson.
8	2	$3\frac{1}{2}$?	V. Ryves.

OWNER'S MEASUREMENTS.

$\mathbf{I}\mathbf{I}\frac{1}{2}$			Spitzkop	American National Collection.
II ½			Cape Colony .	South African Museum.
108		6	Do	E. T. Murray.
$10\frac{1}{2}$	2 1/8	4 ⁵ / ₈	Transvaal	H. T. and A. H. Glynn.
101	$2\frac{3}{8}$	$5\frac{1}{2}$?	Major H. Chamney.
$9\frac{1}{2}$		31	?	Major W. Anstruther Gray.
98	2	41	Basutoland	Lord Milner.
91	21/4	$2\frac{1}{2}$	Near Cape Town .	Capt. W. Jardine.
9	21/4	31/2	Natal	C. S. Mann.



Head of Reedbuck.

The REEDBUCK (Redunca 1 arundinum).

Rietbok, Cape Dutch. Bushmat, Sudani. Bemba, Masara. Inzigi, Amandebili. Im-vwi, Masubia. Um-vwi, Makuba. Inhlango, Swazi. Iklabu, Basuto.

Impoyo, Lower Zambesi.
Mziki, Zulu and Matabili.
Natafwi, Mashukulumbwi.
Mutobo, Barotsi.
Sibughat, Ngami.
Mpoyo, Chilala and Chibisa.
N'tobi, M'Kua.
Maluvwi, Chila.

Reedbucks, none of which is so large as a waterbuck, differ from the latter and the kobs by their lighter build, and the presence of a completely bare or very short-haired patch on each side of the head immediately beneath the ear. The tail is more bushy and shorter, the

¹ Commonly known as Cervicapra; a name which is unfortunately preoccupied.

lateral hoofs are relatively smaller, and the black horns, which are of medium length and stoutness, diverge in an upward and outward direction, with a forward curvature at the tips, which may be hooked. Till very late in life the basal portion of the horns is of a pasty consistence, and sportsmen's measurements on the field often include this. The present species, the true rietbok of the Boers, is the largest of the genus, standing about 36 or 37 inches at the shoulder; and has the ear-patch completely bare, and the horns curving regularly forwards without terminal hooks. Reedbuck are generally met with in small family parties, and when excited or alarmed utter a shrill whistle. Their flesh is of fair quality.

Distribution.—Africa, from the Cape to Angola on the western side, and on the eastern side through Mozambique and South Nyasaland to lat. 8° 25′ N. in the Bahr-el-Ghazal district. As their name implies, reedbuck frequent the reed-brakes fringing so many African rivers; some of the rivers where they are still fairly abundant being the Lotsani in Bamangwato and those of Ngamiland and the country between Mashonaland and the east coast. The under-mentioned Rhodesian specimens probably belong to R. a. occidentalis, distinguished by a greyish tinge in the coat.

Length I on front curve.	Circum- ference.	Tip to Tip.	Locality.	Owner.
17	6	$15\frac{3}{4}$	N.W. Rhodesia	C. Mathews.
16 <u>3</u>	61/4	$15\frac{3}{4}$	Sabi River	Major J. Stevenson-Hamilton.
$16\frac{1}{2}$	5 ³	$14\frac{1}{2}$	P.E. Africa	British Museum (the late Rowland Ward).
162	6	$\mathbf{I}2_{4}^3$	Do	Hon. Walter Rothschild.
168	63	11	N.W. Rhodesia	Capt. P. R. Bald.
161	6	163	Matabililand	R. C. Batley.
16‡	$6\frac{1}{2}$	$15\frac{1}{2}$	N.W. Rhodesia	Col. Lord Douglas Compton.
161	5½	$20\frac{1}{2}$	Barotsiland, N.W. Rhodesia	R. T. Coryndon.
16	$7\frac{1}{2}$	$9\frac{1}{2}$	Do.	Col. C. Harding.
16	71/2	113	N.W. Rhodesia	Capt. F. W. Reichwald.
15 ⁷ 8	61	$10\frac{1}{2}$?	C. D. Rudd.
15₹	64	$14\frac{1}{4}$?	British Museum.
2 1 $5\frac{3}{4}$	61/8	13½	Transvaal	Sir Abe Bailey.
154	6	19	Tanganyika Plateau	Hon. Walter Rothschild.
15章	7‡	16‡	N.W. Rhodesia	LieutCol. R. W. R. Barnes.

1 Horn only, not the pad.

² Abnormal head.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.	Owner.
${\tt I}{\tt 5}{}^{\frac{1}{2}}$	$5\frac{1}{2}$	$19\frac{1}{2}$	Mpimbi, Nyasaland	British Museum (the late Col. F.
151/2	$6\frac{1}{2}$	13	Nyasaland	Trollope). Capt. J. Harington.
158	$5\frac{1}{2}$	19‡	?	Sir Owen Philipps.
151	61/4	133	N.W. Rhodesia	A. P. Henderson.
15‡	6‡	138	Barotsiland, N.W. Rhodesia	F. V. Worthington.
15‡	6	131	Do	Norman B. Smith.
154	6	13 3	Do	The late George Grey.
151	$6\frac{1}{2}$	I 2 1/8	N.W. Rhodesia	J. E. R. Oldfield.
151	$6\frac{1}{2}$	10	Do	M. C. Crawshay.
15½	$6\frac{5}{8}$	111	Manica Plateau, N. of	F. C. Selous.
15	$6\frac{1}{2}$	$9\frac{3}{4}$	Zambesi Mashonaland	Sir John Willoughby, Bart.
15	$6\frac{1}{2}$	13	N. Zululand	R. T. Coryndon.
15	$6\frac{1}{4}$	$8\frac{1}{2}$	N.E. Rhodesia	Col. C. F. Blane.
15	$5\frac{1}{2}$	11	N.W. Rhodesia	G. T. Hutchinson.
15	$6\frac{3}{4}$	141	Do	J. Bell.
15	$6\frac{1}{2}$	91	Do	T. D. M. Cardeza.
143	51/2	$9^{\frac{1}{2}}$	Do	Capt. R. Meinertzhagen.
144	63	${\tt I}{\tt 5}{}^{\frac{1}{2}}$	Do	Capt. H. E. Hambro.
143	6	$10\frac{1}{2}$	Do	R. E. Critchley-Salmonson.
144	$6\frac{1}{2}$	I I ½	Do	Capt. H. E. E. Pankhurst.
I4₹	63	91	Do	Capt. C. G. Leslie.
144	$6\frac{1}{4}$		Do	J. H. Leche.
143	7	$13\frac{1}{2}$	Do	Val Gielgud.
1 121	54	$9\frac{1}{2}$	Congo	H. M. Stephenson.
² I 2	$6\frac{1}{2}$	121	Nyasaland	Mrs. C. B. C. Storey.
			OWNER'S MEASUREM	ENTS.
3 18			South Africa	F. Vaughan Kirby.
$17\frac{1}{2}$	$6\frac{1}{2}$	171/2	Barotsiland, N.W. Rhodesia	Percy C. Reid.
$16\frac{7}{8}$		•••	? .	C. S. Mann.
1678	$5\frac{3}{4}$	I 3½	Zululand	J. Sealy-Bell.
				0.4114

 $^{^1}$ Determination provisional. 2 Albino specimen. 3 This was seen and measured by Mr. Kirby. It had one horn only ; the other was shot off.



Skull and Horns of Eastern Mountain-Reedbuck.

MOUNTAIN-REEDBUCK or ROOI RHEBOK (Redunca fulvorufula).

This reedbuck is considerably smaller than the type species, measuring from about 28 to 31 inches at the shoulder, but has horns of much the same type, without distinct hooks to the tips. The general colour is greyish fawn, showing in some cases a more or less distinct rufous tinge.

Distribution.—Eastern Africa to the south of the Zambesi, particularly Natal, Zululand, and Bechuanaland; represented farther north by the undermentioned race. Rooi (red) rhebok differ from the typical representative of the genus in being inhabitants of the basal slopes of mountains, at a lower level than the tract frequented by the vaal rhebok. They are generally found in small troops of a dozen head or less; and from their active habits and the difficult nature of the ground they frequent, afford excellent stalking. In the neighbourhood of the tributaries of the Limpopo, on the Mabubi, Tamulikan, Machabi, Sunta, and Chobi rivers, as well as the tributaries of the Zambesi east of the Victoria Falls, they are still abundant. Those from the Manica plateau, north of the Zambesi, may be the East African race.

Certain reedbuck from the Lydenburg range of the Transvaal exhibit a tendency to albinism, and have been described as a distinct race (*Redunca fulvorufula subalpina*), but are more probably "sports."

A reedbuck from the Mount Kenia district of East Africa appears to be a local race of this species (*R. fulvorufula chanleri*). In the original specimen the nose shows a dark streak like the one often seen in this and the typical reedbuck.

A.—TYPICAL RACE (R. fulvorufula typica).

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.		Owner.
8	3 ⁷ / ₈	$3\frac{1}{2}$	S.E. Africa .		H. W. Elliott.
7 ³ / ₄	4 ³	$4\frac{3}{4}$?		Hon. Walter Rothschild. (Shot
7 3 8	3 ³ / ₄	4 ¹ / ₈	Zululand		by F. C. Selous.) Sir Owen Philipps.
7‡	5	3	Near Bloemfontein		Major R. Rankin.
7 ½	3 ³ / ₄	$3\frac{1}{4}$?		R. T. Coryndon.
7	$3\frac{1}{2}$	$4\frac{1}{4}$	Zululand		A. Cameron.
7	3 3	44	?		H. E. Berry.
7	$3^{\frac{1}{2}}$	6	?		P. H. Stewart.
7	$3\frac{1}{2}$	54	?		G. Bateman.
		OW	'NER'S MEASURE	ΜE	NTS.
916	5	$6\frac{1}{2}$	Zululand		C. S. Mann.
878	47/8	$4\frac{3}{4}$	Humansdorp .		F. Vaughan Kirby.
85	5 ¹ 8	5	?		P. C. Keytel.
8‡	33	$4\frac{1}{4}$	Transvaal		F. R. N. Findlay.
73		$2\frac{1}{2}$	Do		J. L. Drège.
$7\frac{1}{2}$	4	$3\frac{1}{2}$	Lebombo Range, S.	Α.	Count E. Hoyos.

B.—EASTERN RACE (R. fulvorufula chanleri).

Length on front curve.	Circum- ference.	Tip to Tip.	Loca	ality.		Owner.
7	41	$4\frac{1}{8}$	East Africa			H. G. Watson.
63	$4\frac{1}{2}$	3	Do.			Earl of Kingston.
63	3	2 ³ / ₈	Do.			A. E. Butter.
-63	$3\frac{1}{2}$	5 3 €	Do.			Major H. W. A. Christie.
63	4	38	Do			Capt. T. H. Rivers Bulkeley.
$6\frac{3}{4}$	$3\frac{1}{2}$	$4\frac{1}{4}$	Do.			N. J. Hitchings.
63	$3\frac{1}{2}$	$3\frac{1}{2}$	Do.			Duke of Sutherland.
63	34	3 ³ / ₄	Do.			Capt. J. A. Morrison.

Length on front curve.	Circum- ference.	Tip to Tip.	I	ocality.			Owner.
65	41		East Afric	а.			Capt. E. H. Sinkinson.
6 §	$4\frac{1}{2}$	3 ³ / ₄	Do.			i.	G. W. C. Drexel.
6 5	$4\frac{1}{4}$	$2\frac{3}{4}$	Do.	, ,			G. Henry.
6 5	33	$3\frac{1}{2}$	Do.				Lord Waleran.
6§	31	3 5	Do.				Col. J. E. Gough.
$-6\frac{5}{8}$	5‡	$4\frac{1}{2}$	Do.				Sir Edmund G. Loder, Bart.
$6\frac{1}{2}$	$4\frac{1}{2}$	$2\frac{7}{8}$	Do.				K. V. Painter.
$6\frac{1}{2}$	4	54	Do.				Sir H. Seton Karr.
$6\frac{1}{2}$	3 1	3 ½	Do.				Col. C. F. Blane.
$6\frac{1}{2}$	4	$4\frac{3}{8}$	Do.				W. A. Baird.
$6\frac{1}{2}$	34	5	Do.				D. L. Seth-Smith.
6흫	34	4	Do.			,	Capt. H. C. Hart.
68	41	$3\frac{1}{2}$	Do.				S. H. Christy.
6 ⁸	$3\frac{1}{2}$	5‡	Do.				P. K. Glazebrook.
63	$4\frac{1}{4}$	34	Do.				J. R. Bradley.
68	35	4	Do.				Mrs. Percy C. Madeira.
61	$4\frac{1}{2}$	25 8	Do.				Sir Robert Harvey, Bart.
61	$3\frac{1}{2}$		Do.			. •	J. Jay White.
61	33	31	Do.				E. B. Bronson.
61	4	45	Do.				A. de L. Long.
61	32	$3\frac{3}{4}$	Do.				R. Holmes.
61	$4\frac{1}{4}$	$2\frac{3}{4}$	Do.				J. Leslie.
61	3 ⁷ 8	$3\frac{5}{8}$	Do.				Capt. A. Neave.
6}	41	$3\frac{3}{4}$	Do.				G. P. Gough.
6½	3 = 3	$4\frac{3}{4}$	Do.				R. de la Huerta.
61/8	48	43/4	Do.				A. Fowler.
618	378	4 ¹ 8	Do.				Gorham Brooks.
618	$4\frac{1}{4}$	4	Do.				Major P. H. G. Powell- Cotton.
6 <u>1</u>	$4\frac{1}{2}$	$3\frac{1}{8}$	Do.				S. L. Hinde.
$6\frac{1}{8}$	$3\frac{1}{2}$	3	E. of Lake	e Margheri	ita		Lord Hindlip.
61/8	34	4	East Afric	a .			H. Johnson.
61/8	4	4	Do.				G. C. Slacke.
61/8	4	$2\frac{1}{2}$	Do.				I. Barrington White.
6 <u>1</u>	4	31/4	Do.				R. B. Loder.

⁻ Owner's measurements.



Frontlet and Horns of Eastern Bohor Reedbuck.

The BOHOR REEDBUCK (Redunca redunca).

Kwantan Rafi, Hausa. Njaza, Waganda.

Distinguished from the mountain-reedbuck (with which it agrees approximately in size) by the distinct forward curvature of the tips of the horns, so as to form hooks. General colour uniformly bright fawn, usually with somewhat darker markings on the face and part of forelimbs; tail only slightly bushy, fawn-coloured above and white beneath. The height of the East African race is about 28 inches.

Distribution.—West, East, and North-east Africa.

In addition to one other the following races are recognised:—

R. redunca typica.—Senegal, Gambia, and Gold Coast. Size small; horns short and stout, very thick at base, curved in front, points turned inwards.

R. redunca nigeriensis.—N. Nigeria. Size larger and horns larger and depressed below level of frontal plane.

R. redunca cottoni.—Kordofan, White Nile, and Isle of Meroë, to east of Lado and western Somaliland. Horns long and thin, much curved outwards and backwards, with the points curled straight over, or turning outwards or inwards.¹

R. redunca bohor.—Central Abyssinia. Horns shorter, stouter, and less curved than in cottoni.

R. redunca wardi.—East Africa. Horns larger, stout, curved outwards, with the points much turned inwards.

¹ In the Dinder Valley the type of head with in-curving horns described as Cervicapra r. donaldsoni intergrades with cottoni.

A.—TYPICAL RACE (R. r. typica).

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.	Owner.
10	$4\frac{3}{4}$	61	Gold Coast	Capt. G. H. Hastings.
83	$5\frac{3}{4}$	45	Gambia	Commr. A. A. Ellison, R.N.
81	$5\frac{1}{2}$	5	Senegambia .	G. Fenwick-Owen.
818	$4\frac{1}{2}$	54	Portuguese Guinea	Major P. H. G. Powell-Cotton.

B.—NIGERIAN RACE (R. r. nigeriensis).

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.	Owner.
ΙΙ	5	7	N. Nigeria .	 L. Donisthorpe.
$10\frac{4}{3}$	6 <u>1</u>	7	Do	 Major C. A. Booth.
108	6	4.1	Do	 F. Beckles Gall.
103	$6\frac{1}{2}$	$2\frac{7}{8}$	Lake Chad	 Capt. S. B. B. Dyer.
103	$5\frac{1}{2}$	8	N. Nigeria .	 Capt. O. Oakes.
$-10\frac{1}{4}$	5‡	$4\frac{1}{2}$	Do	 Capt. C. F. Watson.
$IO_{\frac{1}{4}}^{1}$	5	4 3	Do	 Capt. G. C. Kelly.
10	5 3 €	54	Do	 Capt. J. C. Parker.
10	$5\frac{1}{2}$	$6\frac{7}{8}$	Do	 Capt. L. C. Brodie.
10	$5\frac{1}{2}$	54	Nigeria .	 Capt. W. H. Wilkin.
$9\frac{3}{4}$	53	5	N. Nigeria	 A. A. Smith.
93	5	7	Do	 H. C. Bridges.
$9\frac{1}{2}$	51/4	$7\frac{3}{4}$	Do	 Capt. A. Noel Woods.
$9\frac{1}{2}$	5	3\frac{1}{8}	Do	 Major J. W. Carroll.
$9^{\frac{1}{2}}$	$5\frac{1}{2}$	7 ½	Do	 Capt. A. C. Aubin.
$9\frac{1}{4}$	$5\frac{1}{2}$	23	Do	 G. L. Harrison.
91	5	4 1 8	Do	 Capt. W. C. N. Hastings.
9^{1}_{4}	$5\frac{1}{2}$	41	Do	 Major Lord J. S. Cavendish.
95	$5\frac{1}{4}$	61	Do	 Major W. Anstruther Gray.
91	43	63	Do	 Capt. S. C. Peck.
9 1	$6\frac{3}{4}$	3	Do	 Capt. G. Bonham-Carter.
9	$4\frac{1}{2}$	71/2	Do	 Lady Constance Stewart- Richardson.
9	5	54	Do	 Sir E. Stewart-Richardson, Bart.

⁻ Owner's measurements.



Skull and Horns of Abyssinian Bohor Reedbuck.

C.—ABYSSINIAN RACE (R. r. bohor).

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.	Owner.
104	`5∄	II3	West of Lake Tana	Major P. H. G. Powell-Cotton.
105	$5\frac{1}{2}$	5	Abyssinia	D. P. MacGillivray.
10	$4\frac{1}{2}$	31	Do	Sir Edmund G. Loder, Bart.
9 ³ / ₄	5≟	5	Lake Zuay	Lord Hindlip.
9 3	6	8	Zuguala Mt	A. E. Butter.
$9\frac{1}{2}$	5 ⁷	9½	Abyssinia	R. Hayne.
94	53	$5\frac{1}{2}$	Do	Hon. Walter Rothschild.

D.—SUDANI RACE (R. r. cottoni).

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.		Owner.
16	5	23 ³ / ₈	Mongalla .		E. M. Sinauer.
15	$4\frac{1}{2}$	17	Dinder Valley		R. von Rothermann.
15	51	I 2 5/8	Do.		C. Bower Ismay.
143	5 1	165	Do.		Capt. B. W. Y. Danford,
145	6	$II\frac{3}{4}$	Do.		Col. A. Colville.
141	51	13	Do.		Lord Villiers.
I4½	$4\frac{3}{4}$	15	Blue Nile .		G. L. Harrison. (See illustration, p. 222.)



Head of Sudani Bohor Reedbuck, showing the divergent type of horns. Shot by Mr. G. L. Harrison.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.		Owner.
143	$5\frac{1}{2}$	13	Sudan .		Prince Colloredo Mannsfeld.
14	6	$16\frac{3}{8}$	Dinder Valley		Norman B. Smith.
-14		16 8	Blue Nile .		A. L. Butler.
-14		18	Do		G. B. Middleton.
134	54	9	Sudan .		Douglas M'Douall.
133	$5\frac{1}{2}$	$7\frac{1}{2}$	Dinder Valley		C. D. Eyre.
133	5‡	15	White Nile.		P. Santos Saurez.
132	6	9 1 8	Dinder Valley		Miss C. Buxton.
137	5	$12\frac{1}{2}$	Do.		Major C. P. B. Wood.
13%	6	98	Do.		Prince F. Liechtenstein.
133	6	12	Do.		Capt. J. C. Graham.
133	51	$7\frac{1}{2}$	De.		Capt. A. Craufurd.

⁻ Owner's measurements.

Length on front curve.		Circum- ference.	Tip to Tip.	Locality.		Owner.
	I 3½	5	18‡	Dinder Valley		C. E. Russell.
	13‡	5홍	$12\frac{3}{8}$	Mongalla		Capt. P. A. Wilson.
	13‡	$5\frac{1}{2}$	151	White Nile.		Duke of Alba.
	$12\frac{3}{4}$	6‡	8	Blue Nile .		Hon. T. G. B. Morgan-Grenville.
	I 2 3	5	15	Sudan .		Major P. M. Dove.
	I2 ³	5 ⁷ / ₈	I I 1/4	Mongalla .		Capt. R. F. Balfour.

E.—EASTERN RACE (R. r. wardi).

				•		·
Length on front curve.	Circum- ference.	Tip to Tip.	Locality.			Owner.
13 3	518	81	East Africa .			British Museum (Sir John Kirk).
$13\frac{1}{2}$	$5\frac{1}{2}$	$4\frac{1}{2}$	Do			MajGen. Sir J. R. Macdonald.
-12	7	$5\frac{1}{2}$	G.E. Africa			S. E. White.
II $\frac{1}{2}$	$6\frac{1}{4}$	$9\frac{1}{4}$	East Africa			Lord Hindlip.
113	$5\frac{1}{2}$	$7\frac{1}{2}$	Do			S. H. Christy.
10 ⁷ 8	63	$8\frac{1}{2}$	Do			A. Fowler.
105	5 3	78	Do			Sutton Timmis.
10 5	$4\frac{1}{2}$	$5\frac{1}{2}$	Do			Sir Robert Harvey, Bart.
$10\frac{1}{2}$	5½	$9\frac{1}{2}$	Uganda 1 .			Duke of Peneranda.
$10\frac{1}{2}$	6 3	3 2	Do			Col. C. F. Blane.
$10\frac{1}{2}$	6 3	7	East Africa .			F. C. Selous.
$10\frac{1}{2}$	54	$IO_{\frac{1}{4}}$	G.E. Africa			F. H. Melland.
101	61	4	East Africa .			Lord Montgomerie.
IO1	6	41	Do			Lord Wodehouse.
$10\frac{1}{4}$	5 ½	$7\frac{1}{8}$	Do			H. Fowler.
101	6 <u>1</u>	$5\frac{1}{2}$	Do	,		J. Todd.
101	5 ⁸ / ₄	7‡	Do			B. Barr Smith.
108	6	51	?			Col. Max. C. Fleischmann.
10	$5\frac{1}{2}$	$6\frac{1}{4}$	Mau Plateau			Sir F. J. Jackson.
10	7‡	48	East Africa .			C. Craig.
10	5 3	5	Do			Capt. R. Meinertzhagen.
10	6	$7\frac{1}{2}$	Do			R. de la Huerta.
10	6	5	Do			Duke of Medinaceli.
10	5≩	$6\frac{1}{2}$	Do		٠	Duke of Alba.
10	$5\frac{1}{2}$	6	Do			N. C. Cockburn.
10	5‡	7	Do			W. N. McMillan.
	- Owne	er's measuremen	ts.		1]	lay belong to R. r. ugandæ.



Head of Dibatag.

The DIBATAG (Ammodorcas clarkei).

Although resembling the gazelles in the face-markings, the dibatag approximates in foot-structure and the form of the horns to the reedbuck group, to which it may be related. The horns of the males are rather short, and have a regular upward and forward curvature, somewhat like those of a reedbuck; they are ridged on the front for a considerable portion of their length. The neck is considerably elongated, and the tail long and thin. The general colour of the upper-parts is a deep cinnamon. Height at shoulder, about 33 inches; weight, from 65 to 70 lbs. When running, the long neck is thrown back towards the tail, which is elevated, so that the two look as though they would touch. Discovered by Mr. T. W. H. Clarke in 1890.

Distribution.—Central Somaliland, in the eastern districts of the Haud.

Length on front curve.	Circum- ference.	Tip to Tip.	Owner.
125 8	54	4 5	Hon. Walter Rothschild.
113	47	38	Gen. Sir Arthur Paget.
113	43.	35	T. W. H. Clarke.
II 1 4	41	6	R. McD. Hawker.

Length on front curve.	Circum- ference.	Tip to Tip.	Owner.
$11\frac{1}{4}$	$4\frac{1}{2}$	$4\frac{3}{4}$	Col. J. E. Gough.
ΙΙ	$5\frac{1}{2}$.	$2\frac{1}{4}$	Major B. R. M. Glossop.
11	5	$5\frac{1}{2}$	S. Payne-Gallwey.
10 3	$4\frac{1}{4}$	4 ³ / ₄	Mr. Justice Hopley.
$10\frac{3}{4}$	5½	4	Sir Edmund G. Loder, Bart.
103	$4\frac{1}{2}$	3	Capt. B. E. Murray.
101	$4\frac{3}{4}$	4 ⁵ / ₈	Capt. A. H. Mosse.
10½	$4\frac{1}{8}$	$4\frac{1}{2}$	Major P. H. G. Powell-Cotton.
$9\frac{3}{4}$	$4\frac{1}{2}$	5 1 ·	British Museum (T. W. H. Clarke).
9 5	4	$3\frac{1}{2}$	Capt. H. A. Carter.
9½	$4\frac{1}{2}$	48	Dr. R. E. Drake-Brockman.
$9\frac{1}{2}$	5	5	Capt. F. R. Tarleton.

OWNER'S MEASUREMENTS.

13	***		J. D. Inverarity.
$12\frac{3}{4}$			Capt. G. G. S. Brander.
12			C. S. Mann.
$11\frac{3}{4}$	41	5	Capt. J. Brander-Dunbar.
I I ½	$4\frac{1}{2}$	5±5€	Capt. M. McNeill.
108	41	5	P. C. Keytel.



Head of Pala.

The PALA or IMPALA (Æpyceros melampus).

Rooibok, Cape Dutch.

Inzero, Masubia.

Swala, Swahili.

Luondo and Mpala, Barotsi,
Ngami, Chilala, and Chibisa.

Pala, Waganda,
chuna.

Impala, Zulu, Sw
Luboudar, Chila.

Pala, Waganda, Basuto, and Bechuna.Impala, Zulu, Swazi, and Matonga.Luboudar, Chila.

The pala, saiga, and chiru have been generally classed with the gazelles, but apparently form independent groups. The specific name (black-footed) of the first refers to the pair of black tufts on each hind-foot. The horns of the bucks, which are of considerable length in proportion to the size of the animal, show a characteristic and graceful double curvature; and the bright foxy-red hue of the shining hair of the upper-parts is very characteristic. Height at shoulder, from about 34 to 37 or 38 inches. Weight, from about 130 to 160 lbs.

Distribution.—Southern and Eastern Africa, extending as far north as Lower Kordofan. In Angola replaced by an allied form, usually regarded as a distinct species, but which is perhaps only a local race (Æ. melampus petersi), distinguished by the presence of a purplish-black streak down the middle of the face and another through the line of each eye. In the days of their abundance pala

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were found in big troops, such as are still to be met with on the Upper Zambesi, in East Mashonaland, and parts of British East and Central Africa. Some half-century ago they were to be found in similar numbers among the covert on the banks of every river in the Transvaal and Bechuanaland; but it is not till the northern border of the former country that they are now to be met with, and then only in small parties. Pala are some of the fleetest of all antelopes, and are in the habit of leaping high in the air; their presence always implies the neighbourhood of water.

A.—TYPICAL RACE (Æ. melampus typicus).

	gth.					
On front curve.	Straight.	Circum- ference.	Tip to Tip.	Localit	ty.	Owner.
315	$25\frac{1}{2}$	$6\frac{1}{2}$	181	East Africa		Sir Richard Dane.
$31\frac{1}{2}$	$24\frac{5}{8}$	6	16§	Do.		W. Judd.
314	25	$6\frac{5}{8}$	13	Do.		E. M. Crosfield.
3078		$5\frac{3}{4}$	232	Do.		Capt. E. Berry.
304	$24\frac{3}{4}$	$.6\frac{1}{8}$	$24\frac{1}{2}$	Do.		T. de Halpert.
304	$23\frac{1}{2}$	$6\frac{1}{4}$	$15\frac{1}{2}$	Do.		J. G. Millais.
30	$24\frac{3}{4}$	$6\frac{1}{2}$	$20\frac{3}{4}$	Do.		Count C. Podstatzky.
30	24	6‡	17½	Do.		Lord Delamere.
29 3	24	$5\frac{7}{8}$	$19\frac{3}{4}$	Do.		P. F. Hadow.
29章	$24\frac{1}{4}$	$6\frac{1}{4}$	17	Do.		Capt. W. M. Burrell.
29 ⁵ / ₈	$23\frac{1}{2}$	$6\frac{1}{2}$	18	Do.		G. C. Slacke.
$29\frac{1}{2}$	25	6	24	Do.		H. Hyde-Baker.
$29\frac{1}{2}$	$24\frac{3}{4}$	6	$22\frac{3}{4}$	Do.		C. Fahnestock.
$29\frac{1}{2}$	24	6	184	Do.		J. E. R. Oldfield.
$29\frac{1}{2}$	$23\frac{1}{2}$	$6\frac{1}{2}$	$19\frac{1}{2}$	Do.		G. P. L. Cosens.
$29\frac{1}{2}$	$23\frac{3}{4}$	$6\frac{1}{2}$	I 5 ³ / ₄	Do.		A. E. Butter.
291	$24\frac{1}{2}$	6	$19\frac{1}{2}$	Do.		Count E. Hoyos.
$29\frac{1}{4}$	23 5	63	16‡	Do.		W. W. Ashley.
291	$24\frac{1}{2}$	$6\frac{1}{2}$	$22\frac{1}{2}$	Do.		H. B. Cox.
29 1	241	61	$16\frac{1}{4}$	Do.		A. J. A. Douglas.
291	$23\frac{3}{4}$	5 ⁷ 8	$18\frac{3}{4}$	Do.		Capt. G. V. Clarke.
291	238	638	17	Do.		Capt. E. Sartorius.
29	$24\frac{1}{2}$	6	27 g	Do.		Capt. F. H. Span.
29	23\frac{3}{4}	$6\frac{1}{4}$	194	Do.		Major W. E. Stobart.
29	$24\frac{1}{4}$	6	211	Do.		Capt. M. L. Pears.
29	$22\frac{1}{2}$	6	14	Do.		Marquis of Tweeddale.

Leng On front	gth. Straight.	Circum-	Tip to Tip.	Locali	†37		Owner.
curve.		ference. $6\frac{3}{5}$	163 163	East Africa			H. S. L. Scott.
29	$24\frac{1}{4}$ $24\frac{1}{2}$	6 <u>1</u>	22±	Do.	•	•	T. W. H. Clarke.
29		6 <u>‡</u>		Do.	٠	•	Capt. T. H. Rivers Bulkeley.
29	23 22 ³ / ₄	5 <u>₹</u>	17½	Do.	•		LieutCol. P. Polovtsoff.
29	221	5∓ 6	19 3	Do.	•		Dr. A. Paget.
29 28 7	-	5 ³ ±	98 17 §	Do.			Major P. H. G. Powell-Cotton.
28 3		5∓ 6½	171	Do.	•	٠	Major L. Boyd-Moss.
28 3	24	6±		Do.		•	Sir Edmund G. Loder, Bart.
28 <u>3</u>	$23\frac{1}{2}$ $22\frac{1}{2}$	6	19 16 1	Do.	•		N. C. Cockburn.
-	-		_	Do.	•		
28 4	241	6 <u>‡</u> 6	183		•		Capt. C. Steele. Capt. E. C. Hamilton.
283	$23\frac{1}{2}$		151	Do.	•	•	
2834	$23\frac{1}{2}$	6	121	Do.	٠	•	Capt. R. A. McClymont.
28 5	23½	6	24	Do.	•	•	W. N. McMillan.
285	223/4	64	13½	Do.		•	Capt. J. N. Price Wood.
28½	231	6	16	Do.	٠	•	C. W. Turner.
28½	23	61	21½	Do.		•	C. J. Blackburn Maze.
281	22	61	II 1 1/2	Do.		•	Major Lord J. S. Cavendish.
28½	231	$6\frac{1}{2}$	16½	Do.		•	Capt. E. F. Hausburg.
281	$22\frac{1}{2}$	61	121	Do.	•	•	Capt. L. H. Lloyd.
28½	24 ¹ / ₄	6	$20\frac{1}{2}$	Do.		٠	Capt. L. H. Hickson.
284	$24\frac{5}{8}$	61	24½	Do.		•	Capt. R. Meinertzhagen.
281	23	$6\frac{1}{2}$	114	Do.	٠		J. R. Bradley.
281	23	6	19	Do.			G. F. Archer.
281	213	5₹	173	Do.		٠	H. C. Allfrey.
28 <u>1</u>	$23\frac{1}{2}$	6‡	$22\frac{1}{2}$	Do.	•		Duke of Sutherland.
281	231	6	193	Do.	٠		E. B. Horne.
28 1	$23\frac{1}{2}$	$6\frac{1}{2}$	16§	Do.		٠	Capt. R. Clemm.
281	23‡	5₹	$14\frac{1}{2}$	Do.			R. B. Loder.
28‡	23	$6\frac{1}{2}$	21章	Do.			Col. C. F. Blane.
281	231	53	17½	Do.		•	R. de la Huerta.
281	23	6	18	Do.		٠	A. Hamilton Gault.
281	23½	6	$20\frac{3}{4}$	Do.			H. H. Williams.
28	23	61/2	12	Do.			H.R.H. Prince Arthur of Connaught.
28	228	63	25	Do.			Earl of Warwick.
28	23	6‡	13	Do.			Walter Jones.
28	$24\frac{1}{4}$	63	171	Do.			R. Hayne.

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Ler On front curve.	gth. Straight.	Circum- ference.	Tip to Tip.	Localit)'a		Owner.
28	231	5 8	22	East Africa	,		Hon, E. Coke.
28	233	53	173	Do.			C. H. Tritton.
28	24	6	22 ³ / ₄	Do.			H. B. Tate.
28	$22\frac{1}{2}$	6	12	Do.			Sir F. J. Jackson.
28	21	5 7 8	I 2 1/4	Do.			G. E. Smith.
28	22	$5\frac{1}{2}$	161	Do.			Capt. F. W. Barrett.
28	22 ³ / ₄	$5\frac{1}{2}$	$13\frac{1}{2}$	Do.			The Master of Belhaven.
28	$23\frac{1}{2}$	6‡	22	Do.			Capt. C. J. Murray.
28	$22\frac{3}{4}$	5 ³ / _*	24 ¹ 8	Do.			Capt. W. H. Wilkin.
28	$22\frac{1}{2}$	5 ³	194	Do.			Capt. J. Fitzgerald.
28	$22\frac{1}{4}$	6	13	Do.			D. Davies.
28	$22\frac{3}{4}$	61	$9\frac{1}{2}$	Do.			G. O. Sloper.
28	$22\frac{1}{2}$	61	188	Do.			P. Fleming.
$27\frac{3}{4}$	23	61/4	19	Do.			Lord Wodehouse.
$27\frac{3}{4}$	$22\frac{1}{2}$	6	I I 1 1	Do.			Capt. G. F. Phillips.
$27\frac{3}{4}$	22	54	163	Do.			Capt. the Hon. G. H. Douglas-Pennant.
$27\frac{3}{4}$	21	6	$9\frac{1}{2}$	Do.			LieutCol. the Hon. W. A. W.
$27\frac{3}{4}$	23	5₹	18	Do.			Lawson. Hon. Mrs. Blyth.
27 ³ / ₄	231	6	$13\frac{1}{2}$	Do.			Major H. F. T. Fisher.
$27\frac{3}{4}$	$2I\frac{1}{2}$	6	I23	Do.			F. Garside.
$27\frac{1}{2}$	221	5 ³ / ₄	151	Do.			Major S. Belfield.
$27\frac{1}{2}$	231	$5\frac{3}{4}$	$12\frac{8}{4}$	Do.			Rhys Williams.
$27\frac{1}{2}$	$22\frac{1}{4}$	6	$II\frac{3}{4}$	Do.			F. C. Selous.
$27\frac{1}{2}$	$2I\frac{1}{2}$	$5\frac{3}{4}$	$13\frac{1}{2}$	Do.			Lord Hindlip.
$27\frac{1}{2}$	23	6	$19\frac{1}{2}$	Do.		٠.	G. C. Whitaker.
$27\frac{1}{2}$	$22\frac{1}{4}$	61	$14\frac{3}{4}$	Do.			A. Brocklehurst.
$27\frac{1}{2}$	$22\frac{7}{8}$	6‡	$10\frac{1}{2}$	Do.			Major C. U. Price.
$27\frac{1}{2}$	$23\frac{1}{8}$	6	183	Do.		,	A. Bayley-Worthington.
$27\frac{1}{2}$	$21\frac{1}{2}$	$6\frac{1}{8}$	103	Do.			G. de P. Colvile.
$27\frac{1}{2}$	$23\frac{1}{2}$	55	$21\frac{1}{2}$	Do.			H. C. Phipps.
$27\frac{1}{2}$	$22\frac{1}{4}$	$6\frac{1}{4}$	171	Do.			Capt. J. A. Morrison.
$27\frac{1}{2}$	$23\frac{1}{2}$	5₹	191	Do.			Arthur James.
$27\frac{1}{2}$	21	5 7	141	South Africa		٠	British Museum (Dr. Burchell).
24	19‡	6‡	12	N. Zululand	٠		Col. Lord Douglas Compton.
$23\frac{3}{4}$	185	$5\frac{1}{2}$	108	Ngamiland			A. G. Stigand.

B.-NYASA RACE (Æ. melampus johnstoni).

Most of the following specimens are only referred provisionally to this race.

Mr. R. T. Coryndon writes that although in N.E. Rhodesia horns of 20 inches are rare, in the Northern Transvaal and Swaziland, where pala abound, horns of 22 inches are not uncommon, and a few specimens are still longer.

Length.							
On front curve.	Straight.	Circum- ference.	Tip to Ti	Locali	ity.		Owner.
$22\frac{1}{2}$	18‡	54	$9\frac{1}{2}$	N.W. Rhodesia	٠	٠	H. D. Hannay.
$22\frac{1}{4}$	$18\frac{1}{2}$	$5\frac{1}{2}$	9 1	N.E. Rhodesia			R. D. Waterhouse.
22	184	51	ΙΙ	Nyasaland .			A. V. Willcox.
21	184	$4\frac{3}{4}$	$II_{\frac{3}{2}}$	Do			Capt. J. S. Brogden.
21	$17\frac{1}{2}$	$5\frac{1}{4}$	$15\frac{1}{2}$	Rhodesia .			A. W. Griffin.
201	17	6	$9\frac{1}{2}$	N.W. Rhodesia			J. Bell.
20	i 6	54	$8\frac{1}{2}$	N.E. Rhodesia			F. H. Melland.
20	16	5	$6\frac{1}{2}$	Do.			H. Cookson.
20	16	5	$6\frac{1}{2}$	N.W. Rhodesia			Hon. J. Cunliffe-Lister.
19∄	16½	$5\frac{1}{8}$	65	Do.			Major J. Carden.
193	16	$4\frac{3}{4}$	$9\frac{1}{4}$	Do.			R. C. Wood.
192	15₹	5	$6\frac{1}{4}$	Nyasaland .			K. L. Storey.
$19\frac{1}{2}$	17	5	$7\frac{3}{8}$	N.W. Rhodesia			J. H. Leche.
19½	16‡	$5\frac{1}{2}$	$12\frac{3}{4}$	Do.			H. R. Phillips.
19‡	154	$4\frac{3}{4}$	$7\frac{1}{2}$	N.E. Rhodesia			Col. A. Colville.
.194	154	5	6‡	N.W. Rhodesia			Capt. the Hon. G. H. Douglas-Pennant.

C.—ANGOLA RACE (Æ. melampus petersi).

Len	gth.						
On front curve.	Straight.	Circum- ference.	Tip to Tip.	L	ocalit	y.	Owner.
234	193	6	$14\frac{3}{8}$	Angola			C. W. Sharp.
$23\frac{1}{2}$	1 9½	$5\frac{1}{2}$	133	Do.			Sir Edmund G. Loder, Bart.
231		$5\frac{1}{2}$	15	Do.			A. H. Harrison.
231	18½	5 8	98	Do.			W. C. Neilson.
211	18	5‡	19‡	S.W. A	frica		A. N. Henderson.
21	178	5 7	$11\frac{3}{4}$	Angola			Hon. Walter Rothschild.

SAIGA 231



Horns of Saiga. From the Hon. Walter Rothschild's specimen.

The SAIGA (Saiga tatarica).

One of the most remarkable of all antelopes is the Central Asian saiga, which differs from most of its kindred by the inflated and puffy nose. This forms a kind of trunk, comparable to that of the dik-diks, with the nostrils directed downwards. The tail is short, and lateral hoofs are present. In summer the colour is dull yellowish above and whitish beneath, but in winter the whole coat is uniformly whitish. The short and blunt ears are thickly covered with hair, and the horns of the males pale amber-colour. Height at shoulder, about 30 inches.

Distribution.—The Kalmuk steppes of Southern Russia, Northern Russian Turkestan, particularly between the Sea of Aral and Lake Balkash; and locally throughout Zungaria as far east as the western edge of the Gobi. Formerly the range extended to the confines of Poland.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.		Owner.	
14 3	54	$3\frac{1}{2}$	Siberia			Hon. Walter Rothschild. (See illustration.)
$13\frac{3}{4}$	5		Volga Steppe			at 'm t 1 a T 1 m
133	4 8	$3\frac{1}{2}$	5			Sir Victor Brooke's Collection.
13 5	5	$5\frac{1}{2}$	Sarepta, South Russia			British Museum.
$13\frac{1}{2}$	5	38	Eastern Zungaria .	٠		J. H. Miller.
$-12\frac{3}{4}$	5	2	?			Imperial Museum, Vienna.

⁻ Owner's measurements.

Length on front curve.	Circum. Tip to Tip.		Locality.						Owner.
$-12\frac{3}{4}$	5	5			?				J. C. Phillips.
$-12\frac{1}{2}$	5	$4\frac{1}{4}$	Siberia .						Dublin Museum.
121	5	$5\frac{7}{8}$	Do						Duke of Bedford.
121	5	$4\frac{1}{2}$	Do						Rowland Ward.
II ½	43	$5\frac{1}{2}$	Do						Dr. Albert von Stephani.
$S^{\frac{1}{2}}$		5 ¹ / ₄	Do						Major W. Anstruther Gray.

- Owner's measurements.



Head of Saiga.

CHIRU 233



Chiru. Shot by Mr. H. C. V. Hunter.

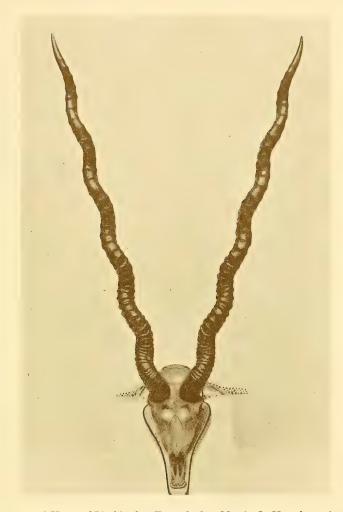
The CHIRU or TIBETAN ANTELOPE (Pantholops hodgsoni).

Among several animals peculiar to the Tibetan plateau none is more interesting than the chiru, whose beautiful horns form some of the most cherished trophies of the sportsman. Although very unlike in general appearance, the chiru is related to the saiga, having the nose even more swollen at the sides, at least in the male, but less bent downwards at the tip. The long black horns of the bucks, which are somewhat compressed, rise almost vertically from the head, and are slightly divergent, nearly straight below, but evenly curving forwards above, and ridged in front. General colour of hair, which is very dense and short, pale fawn above, with a pinkish suffusion, but the face and part of the limbs of the males black or dark brown. Height at shoulder, about 31 or 32 inches; weight, from 90 to 120 lbs. The genus is peculiar in having only two pairs of premolar teeth in each jaw.

Distribution.—The plateau of Tibet, at elevations of from 13,000 to 16,000 feet, or even more; the species associates in pairs or small parties.

Length on front curve.	Circum- ference.	Tip to Tip.		Locality.			Owner.
27 ³ / ₄	$6\frac{1}{8}$	I 3½	North o	of Beansi	Pass		British Museum (Hume Collection).
27 ⁵ ₈	$5\frac{1}{2}$	111	Tibet.				Sir Robert Harvey, Bart.
27 ¹ 8	5 ⁷ 8	15½	North	of Beansi	Pass		British Museum (Hume Collection).
27	6	$14\frac{1}{2}$		3			Hon. Walter Rothschild.
27	5	$13\frac{1}{2}$	Tibet .				P. F. Hadow.
2 6	4 \frac{7}{8}	I 2 7/8	Do				Capt. G. Campbell.
25§	$5\frac{1}{2}$	$12\frac{3}{4}$		3			Arnold Pike.
$25\frac{1}{2}$	5 3	II $\frac{1}{2}$	Tibet .				Major C. B. Vandeleur.
$25\frac{3}{4}$	5 ³ / ₄	141		?			Major Sir W. Codrington.
$25\frac{1}{2}$	$5\frac{1}{2}$	$12\frac{3}{4}$?			Miss Barber.
$24\frac{3}{4}$	5	11		?			E. L. Phelps.
24 ³ / ₄	$5\frac{1}{2}$	$15\frac{1}{2}$	Tibet .				Capt. J. A. Stewart-Balmain.
$24\frac{3}{1}$	5	191	Do				Royal Scottish Museum.
$24\frac{1}{2}$	5	$12\frac{3}{4}$	Do				Capt. H. H. P. Deasy.
$24\frac{1}{2}$	5	$13\frac{1}{2}$	Do				Capt. J. F. Turner.
241	44	181		?			Capt. D. L. R. Lorimer.
241	5 1	$13\frac{1}{2}$		3			Capt. W. F. Corbett.
24	$5\frac{1}{2}$	15		?			Capt. L. Oldfield.
24	$5\frac{1}{4}$	II $\frac{1}{2}$	Tibet .				Sutton Timmis.
24	5	$I 2^{ L}_{2}$	Do				P. Radclyffe.
		O,	WNER'	S MEAS	SURI	ЕМІ	ENTS.
27	6	17	Mansai	rawar Lal	ke		Capt. F. M. Bailey.
27	5 5	141	Tibet .				Major G. K. Channer.
27		12		3			J. D. Inverarity.
26 3	6	134	Tibet .				Dr. Albert von Stephani.
$26\frac{1}{2}$			Chang-	chenmo			LieutCol. A. E. Ward.
26½	5 ³ / ₄	$12\tfrac{3}{4}$	Tibet .				J. C. Phillips.
251	5	$10\frac{4}{3}$	Do				Major P. H. G. Powell-Cotton.
25	54	11	Chang-	chenmo			Sir Edmund G. Loder, Bart.

24½ 4¾ .. Tibet . . . Major-General A. A. A. Kinloch.



Skull and Horns of Blackbuck. From the late Mr. A. O. Hume's specimen.

The BLACKBUCK or INDIAN ANTELOPE (Antilope cervicapra).

Although in former days nearly all the then known species of antelopes were included in the genus *Antilope*, the extent of the latter has been gradually whittled down until it now comprises the Indian blackbuck alone. In addition to being the sole representative of the genus, this species is also the type of a subfamily or group of antelopes, embracing the springbuck, gazelles, and gerenuk. These are small or medium-sized antelopes, with hairy muzzles, generally short tails, and tall, narrow-crowned cheek-teeth, like those of sheep. In

the springbuck and the majority of the gazelles horns are present in both sexes, but in the rest are confined to the males. From all the other members of this assemblage the blackbuck is distinguished by the beautiful spiral formed by its horns. It has large, expansile face-glands, a short and compressed tail, and lateral hoofs. Height at shoulder, about 32 inches; average weight, 85 lbs. It is only in adult males that the characteristic dark tint from which the species takes its name is developed, young males being uniformly brownish fawn above like the does; the latter, like gazelles, have two teats.

Distribution.—India, from the foot of the Himalaya to Cape Comorin, and from the Punjab to Lower Assam; unknown in Ceylon and the countries to the eastward of the Bay of Bengal.

Length straight.	Circum- ference.	Tip to Tip.	Locality.	Owner.
28 1	5	173	Near Delhi .	British Museum (Hume Collection).
27월	51		Central Provinces	A. H. Morris.
$27\frac{3}{8}$	5	1 S 5	Bikanir	H.H. the Maharaja of Bikanir.
27	53	198	Patiala .	Major W. Cox.
$26\frac{7}{8}$	4 3	26	Alwar	LieutCol. L. Impey.
$26\frac{3}{4}$	4 ³ / ₄	251	Bhurtpore .	LieutGen. Sir E. T. H. Hutton.
$26\frac{1}{2}$	$5\frac{1}{2}$	$11\frac{1}{2}$	Alwar	Hon. E. S. Montagu.
$26\frac{1}{2}$	54	$27\frac{3}{4}$	United Provinces	Capt. C. B. Oldfield.
26½	4 7	$14\frac{3}{4}$	Bikanir	Lord Hardinge.
26 3	5	178	Sirsa, Punjah .	British Museum (Hume Collection).
26 1 g	51	22	Bikanir	Col. G. D. F. Sulivan.
26 ₁ 3 ₀	$4\frac{1}{2}$	20	?	Sir Edmund G. Loder, Bart.
$26\frac{1}{4}$	5	19	Alwar	H.H. the Maharaja of Alwar.
261	5	$23\frac{1}{8}$	Oudh	E. St. J. Lawson.
261	5	231	Bikanir .	H.H. the Maharaja of Kotah.
26	5	2 I $_{8}^{7}$	Do	LieutCol. H. W. Codrington.
254	4 3	19	Jeypore	Hon. A. Holland-Hibbert.
$25\frac{3}{4}$	43		Agra	Capt. F. W. Van der Kiste.
25 §	54	19	?	Lady Jenkins.
251	47	18	Punjab	LieutCol. R. H. Rattray.
25‡	$4\frac{3}{4}$	19	Jeypore	A. B. Graves.
25½	5 ¹ / ₈	15	Kathiawar .	LieutCol. L. L. Fenton.
25	5	18‡	;	LieutCol. H. G. Mainwaring.
243	5	20	Jeypore	LieutCol. J. B. Buchanan.
243	$4\frac{1}{2}$	17.4	Dholpur	A. J. Coppinger.

Length straight. $24\frac{1}{2}$	Circumference. $5\frac{1}{2}$	Tip to Tip.	Locality.		Owner. Capt. G. S. Bull.
$24\frac{1}{2}$	5	15	?		The late Earl of Minto.
$24\frac{1}{2}$	5	18	Bikanir		P. B. Vander Byl.
		70	WNER'S MEASU	REM	IENTS.
301			?		Capt. J. MacRae-Gilstrap.
1 2 $8\frac{3}{4}$			Jeypore		General Sir B. Blood.
28		20	Do		LieutCol. P. Durell Pank.
28	5	15	Near Ahmedabad		T. Le Mesurier.
27 4	$5\frac{1}{2}$	$16\frac{1}{2}$	Jeypore		R.E. Mess, Roorkee.
27	5	20 3	Rajputana .		BrigSurg. A. D. Campbell.
27	5	1 9½	Bikanir .		Capt. Harry V. Brooke.
26 3	5	$21\frac{3}{8}$	Punjab		Major R. P. Wemyss Quin.

¹ Measured and recorded by the late Mr. A. O. Hume, but not now in the possession of General Sir B. Blood.



Head of Blackbuck.



Head of Goa.

The GOA or TIBETAN GAZELLE (Gazella [Procapra] picticaudata).

The goa is the typical representative of a subgenus of gazelles characterised by the short tail, the absence or small size of the face-glands and the tufts of hair on the knees, and the lack of horns in the female. Face-markings are also wanting. As a species, the goa is distinguished by its comparatively small size, and the strongly marked backward curvature of the horns, which are not hooked at the tips, as well as by the large size of the white rump-patch, and the pale colour of the coat. Height at shoulder, about 24 or 25 inches. Weight, about 45 lbs.

Distribution.—The plateau of Tibet and some of the adjacent parts of Central Asia.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.	Owner,
145	3₹	5	Ladak	Sir Edmund G. Loder, Bart.
148	35	2	Hanle, Spiti	Hon. Walter Rothschild.
13%	$3\frac{5}{1}$	83	Gyantse, Tibet .	Capt. R. S. Kennedy.
133	34	3	Ladak	Major G. F. Mockler.
13½	35	54	N. of Sikhim	British Museum (Hume Collection).
13½	3 %	5	Tibet	C. Hamilton.
13 ¹ / ₈	43	3 3	Ladak	Major Neill Malcolm.

Length on front curve.	Circum- ference.	Tip to Tip.		Locali	ty.		Owner.
13½	4	35	Tibet				H. C. V. Hunter.
13	$4\frac{1}{8}$	$4\frac{1}{2}$	East La	dak			Col. J. Biddulph.
13	3 ² / ₄	$I\frac{1}{2}$?			Major C. B. Vandeleur.
13	3 ⁷ 8	$4\frac{5}{8}$?			Capt. W. T. Hodgson.
13	3 ³ / ₈	$4\frac{1}{4}$	Tibet				P. K. Wise.
13	34	5 ³ / ₈	N. of Si	ikhim			Major A. Pearse.
I 23/4	$3\frac{3}{4}$	$6\frac{1}{2}$?			E. McClellan.
I 2 3	4	$6\frac{1}{4}$	Ladak				Baroda State Museum.
I 2 3	4	4 ³ / ₄	Do.				Earl of Ilchester.
125	$3\frac{1}{2}$	$2\frac{1}{4}$	Do.				K. C. Zarzhetsky.
I 2 ½	3 ⁸	5	Do.				Dr. T. G. Longstaff.
121	$3\frac{7}{8}$	$2\frac{1}{2}$?			Major Lord Charles M. Nairne.
$12\frac{1}{2}$	$3\frac{1}{2}$?			G. W. Grabham.
I 2 3/8	$3\frac{1}{2}$	$5\frac{1}{2}$	South o	f Han	le		Col. F. C. Lister-Kay.
121	3₹	$2\frac{1}{2}$?			T. R. Ubsdell.
121	$3\frac{1}{2}$	6‡	Ladak				The late David T. Hanbury.
124	34,	4	Tibet			0	W. A. Conduitt.
121	3 ³ / ₄	$4\frac{1}{2}$	Do.				Major F. G. T. Deshon.
12	34	35	Kan-su,	Tibe	t Bor	der	K. K. Horn.
		O	WNER'	SME	EASU	JRE	MENTS.
14			Ladak				Major Brown.
14			Do.				C. C. Winn.
138	$3\frac{1}{2}$	6½	Do.				Capt. F. M. Bailey.
134	$3\frac{1}{2}$	3	Do.				LieutCol. H. W. Codrington.
13½	3 5	61	S.E. of	Hanl	е		Major P. H. G. Powell-Cotton.
13	3 ³ / ₄	5₹	Tibet				Bombay Natural History Society.
13	$3\frac{1}{2}$	4	Do.				Capt. F. W. A. Wells.
I215	3 \frac{5}{8}	4	Do.				Officers' Mess, 3rd Gurka Rifles.
124	$3\frac{1}{2}$	$7\frac{1}{2}$	Gyantse	e, Tib	et		Capt. A. O. Creagh.



Head of Przewalski's Gazelle. Shot by Mr. G. Fenwick-Owen.

PRZEWALSKI'S GAZELLE (Gazella [Procapra] przewalskii).

Nearly allied to the goa, from which it differs by its rather larger size, and the distinct hooks formed by the tips of the horns of the bucks. General colour in summer, deep fawn; in winter, pale finely grizzled fawn; white of buttocks running up in an angle on each side of the tail, which is very short, and almost concealed by the fur. Front of limbs more or less brown.

Distribution.—Northern Kan-su and Ordos.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.	Owner.
121	$4\frac{3}{4}$	$4\frac{1}{2}$	Nr. Shiakou, 2 days S.E. of Kanchow	G. Fenwick-Owen.
101	48	2 ³ / ₄	?	British Museum.
10	4	45	?	H.R.H. Henri de Bourbon, Comte de Bardi.
9 1	$4\frac{1}{8}$	48	North of Pekin .	British Museum (R. Swinhoe).
98	45	11	Nr. Shiakou, 2 days S.E. of Kanchow	H. F. Wallace.
-811	37	48		Paris Museum (Père A. David).

⁻ Owner's measurements.



Frontlet and Horns of Altai Zeren Gazelle.

The ZEREN or MONGOLIAN GAZELLE (Gazella [Procapra] gutturosa).

Zeren or Seren, Mongolian.

Hwang-yang, Chinese.

Much larger than the goa, this species takes its name from the swollen condition of the throat of the bucks during the pairing-season. In addition to its size (height at shoulder, about 30 inches), it is characterised by the comparatively slight backward curvature of the light brown or grey horns, which are relatively small and not hooked at the tips; the general colour of the upper-parts and fronts of the legs in summer being pale fawn, with the front of the face light brown, and the white of the rump reaching to the sides of the short tail. The ears are relatively small. Rudimentary knee-tufts and small face-glands, as well as inguinal glands (lacking in the goa) are present.

Distribution.—The whole of northern Mongolia from the Kosh-Agatch steppe in the west to the Khingan region in the east. Also the central Gobi.

Two closely allied races are recognised, the typical G. gutturosa typica and the Altai G. g. altaica. The following specimens belong to the Altai race.

Length on front curve.	Circum- ference.	Tip to Tip.	Loc	cality.		Owner.
134	48	$3\frac{1}{2}$	Altai			Sir Edmund G. Loder, Bart.
12	48	6	Do.			J. H. Miller.
113	$4\frac{1}{2}$	$5\frac{1}{2}$	Do.			Sir Edmund G. Loder, Bart.
II	48	48	Do.			St. George Littledale.
11	42	64	Do.			A. Louw.
II	4	7	Do.			British Museum (R. Hayne).
10 3	4	$6\frac{5}{8}$	Do.			P. B. Vander Byl.
IO^1_2	4	5 ¹ / ₈	Do.			Hon. Walter Rothschild.



Head of Goitred Gazelle. Shot by Mr. G. Fenwick-Owen.

The GOITRED GAZELLE (Gazella subgutturosa).

With this species we come to the true gazelles, in which the tail is considerably longer than in *gutturosa*, *przewalskii*, and *picticaudata*, being from six to eight inches in length and black, while tufts of long hair on the knees, glands on the face and in the groin are always developed. In immature animals a dark streak in front of the eyes is present, but in many adult specimens this and the light fawn of the upper part of the face are very indistinct and often wanting in the winter coat. Horns, which are absent in the female, relatively large

and divergent. The rump-patch extends to the root of the tail, and the ears are small. Height at shoulder, from 26 to 27 inches. The larynx is swollen in males during the breeding-season, when it forms a prominence on the front of the upper part of the throat of the bucks. The Marica gazelle is smaller, with horns in the females.

There are two races of this gazelle, the Caspian and Persian G. s. typica, and the Altai G. s. sairensis, in which the size is large but the horns are relatively small.

Distribution.—From north-west Persia, eastern Asia Minor, and Caucasia in the west, through Russian Turkestan and Zungaria to the southern Gobi in the east.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.	Owner.
I 5.3	$4\frac{3}{4}$	$4\frac{1}{2}$	Persia	Sir W. Preece.
$-15\frac{1}{8}$	$4\frac{1}{4}$	74	Sheraz	Dr. Albert von Stephani.
144	$4\frac{1}{2}$	9^{1}_{2}	?	Hon. Walter Rothschild.
138	$4\frac{3}{4}$	$7\frac{3}{4}$	Ili Valley	Capt. J. N. Price Wood.
13₹	$4\frac{1}{2}$	6	Saissan, W. Siberia .	British Museum (Dr. O. Finsch).
135	4 5	$4\frac{1}{4}$	S. Zungaria	J. H. Miller.
13½	$4\frac{1}{2}$	5‡	San-cao-tion, Kan-su	G. Fenwick-Owen.
13	$4\frac{3}{4}$	41/4	Persia	E. Rennie.
121	41	$5\frac{1}{2}$	San-cao-tion, Kan-su	H. F. Wallace.
			- Owner's measurements.	

The SAIKIK GAZELLE (Gazella yarcandensis).

Saikik, Turki.

A larger species than the goitred gazelle, standing some 28 inches, with the ears much longer, the face-markings distinct, and the general colour darker. The horns, present only in the bucks, are somewhat heavier and longer than in the typical form, and the white markings on the rump extensive.

Distribution.—Chinese Turkestan from Yarkand to Lob Nor.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.		Owner.
17	$4\frac{1}{2}$	$6\frac{7}{8}$	Eastern Turkestan		Sir Edmund G. Loder, Bart.
16	5	31/4	Yarkand		British Museum (Hume Collection).
-15‡		5	Maralbashi .		Sir H. Lennard, Bart.
143	$4\frac{7}{8}$	3	Eastern Turkestan	,	Major C. S. Cumberland.

⁻ Owner's measurements.



Skull and Horns of Saikik Gazelle, in the possession of Sir Edmund G. Loder, Bart.

Length on front curve		Tip to Tip.	Locality.		Owner.
141	5	$5\frac{1}{4}$	Tien Shan .		G. L. Harrison.
14	5	5 3	Eastern Turkestan		Col. J. Biddulph.
134	5	4	Chinese Turkestan		J. V. Phelps.
134	4 ⁷ / ₈	$4\frac{1}{2}$	Do.		E. L. Phelps.
13½	4 3	$6\frac{5}{8}$	Maralbashi .		The late David T. Hanbury.
		07	WNER'S MEASUR	ΕM	ENTS.
148	318	4 ³	Lob Nor		Paris Museum (Prince Henri d'Orléans).

THE SEISTAN GAZELLE (Gazella seistanica).

The Seistan gazelle of Eastern Persia differs by the much smaller extent of the white on the rump, which does not reach the root of the tail, and the white muzzle.

Length on front curve.	Circum- ference.	Tip to Tip.	Lo	calit	У	Owner.
14_{4}^{1}	5	$7\frac{3}{4}$	N. Persia			Capt. C. T. Daukes.
14	4	31/8	Do.			LieutCol. R. L. Kennion.
$12\frac{3}{4}$	434	54	Do.			British Museum (LieutCol. R. L. Kennion).



Heads of Seistan Gazelle and Kennion's Gazelle. The three upper figures are the Seistan, and the three lower (of which the middle one is a doe) Kennion's gazelle.

KENNION'S GAZELLE (Gazella fuscifrons).

Allied to the last (which it serves to connect with the Indian gazelle), but with horns in both sexes, and no goitre in the throat of the bucks.

Distribution.—Typically Jalk, but ranging over Seistan and Kain to Baluchistan.

Length on front curve.	Circum ference.	Tip to Tip.	Locality.			Owner,		
$14\frac{1}{2}$	$4\frac{3}{4}$	$4\frac{1}{2}$	Baluchistan				Capt. T. W. Greenfield.	
12	4	3 ¹ 8	S.E. Persia				LieutCol. R. L. Kennion.	
113	4	$3\frac{1}{4}$	Do.				Capt. C. T. Daukes.	
$9\frac{1}{2}$	34	38	Do.				Capt. A. McCleverty.	



Head of Indian Gazelle. Shot by Lieut.-Col. P. C. Palin.

The CHINKARA or INDIAN GAZELLE (Gazella bennetti).

Closely allied to the last species, this gazelle (the ravine-deer of many Anglo-Indian sportsmen) is characterised by the absence of in-turning of the tips of the horns, the restriction of the white on the rump to the back and inner sides of the thighs, so that it does not reach the root of the tail: the height at the shoulder varies from 25 to 26 inches, and the general colour of the upper-parts is dull fawn.

Distribution.—Peninsular India.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.		Owner,		
15 ⁵ / ₈	$4\frac{3}{4}$	$5\frac{1}{2}$?		LieutCol. P. C. Palin. (See illustration.)		
155	41		Ferozepore		Mess of the 14th Sikhs.		
-15	5		Rajputana		H.H. Maharaj Rana Bahadur of Jhalawar.		
144	$4\frac{1}{2}$	8	Punjab .		C. H. Shanan.		
144	45	$7\frac{1}{4}$	Sind .		Capt. J. L. Sleeman.		
$14\frac{1}{2}$	$4\frac{1}{2}$	85	Dholpur .		L. M. le Champion.		

⁻ Owner's measurements.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.	Owner.
$14\frac{1}{2}$	43	7 ½	Patiala	Major J. F. P. Langdon.
$14\frac{1}{4}$	$4\frac{3}{4}$	6	Bikanir	J. A. ffolliott Powell.
141	$4\frac{1}{4}$	3	Wana Plain, Wazir-	A. J. Grant.
14	$3\frac{7}{8}$	$7\frac{1}{8}$	istan. Patiala	Major R. P. Wemyss Quin.
14	$4\frac{1}{2}$	658	Bikanir	Maharaja of Bikanir.
$13\frac{3}{4}$	41/4	7	?	R. H. Edmondson.
133	4 3	81/2	Sind	L. Napier.
135	48	$7\frac{1}{2}$	Bikanir	. Capt. C. F. Vander Byl.
13½	41/4	63	Muttra	. Major G. F. Mockler.
138	$4\frac{1}{2}$	61/4	Punjab	R. H. Heath.
134	4	4 ¹ / ₄	?	Sir Edmund G. Loder, Bart.
134	4	61	?	Major O. A. Chambers.
134	$4\frac{1}{4}$	4	Khelat	British Museum (Hume Collection).
13 ¹ / ₈	$4\frac{1}{2}$	$6\frac{3}{4}$?	Mess of the 2nd Central Indian Horse.
13	$3\frac{1}{2}$	6	Bikanir	. LieutCol. H. C. Morland.
13	3\frac{3}{4}	6	?	LieutCol. R. H. Rattray.
123	41	5	Goorgaon, Punjab .	British Museum (Hume Collection).
123	48	$7\frac{1}{2}$?	H. C. V. Hunter.
123	44	$5\frac{7}{8}$	North Punjab .	. Col. J. Biddulph.
$12\frac{3}{4}$	$4\frac{1}{4}$	7	?	Major L. I. B. Hulke.
123	4\frac{1}{8}	5 3	Bikanir	. Capt. E. N. Jones-Vaughan.
$12\frac{3}{4}$	4	6	Jodhpore	. H.H. the Maharaja of Bikanir.
I 2 5/8	4	8	?	J. Gouldsmith.
$12\frac{1}{2}$	4 ³ / ₈	63	?	Major A. D. Greenhill-Gardyne.
♀ 7⅓	2	$2\frac{1}{2}$?	Sir Edmund G. Loder, Bart.
♀ 7₺	5	$2\frac{1}{4}$?	Sir Victor Brooke's Collection.



Horns of the Edmi Gazelle.

The EDMI or ATLAS GAZELLE (Gazella cuvieri).

The African representative of Kennion's gazelle and the chinkara, characterised by the horns in the bucks diverging more or less regularly upwards, and not incurving at the tips. There is a blackish spot on the tip of the muzzle, and the coat is rough. General colour dull fawn, with a very indistinct lateral band, well-defined face-markings, the lower portion of the tail crested with black, and the under-parts, buttocks, and inner surfaces of fore-legs white. Height at shoulder, 26 to 27 inches.

Distribution.—The mountains of Morocco, Algeria, and Tunisia, where it is known by the name of edmi or admi.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.			Owner.			
I47/8	5	35	Algeria .				Sir Edmund G. Loder, Bart.		
145	$4\frac{3}{4}$	4‡	N. Tunis				J. I. S. Whitaker.		
1416	$4\frac{7}{8}$	8	Constantin	ie .			British Museum (E. Richardson Cox).		
148	4 8	7	Do.		•		Royal Scottish Museum (E. Richardson Cox).		
141	33	$5\frac{1}{2}$	Algeria .						
-144			Do				C. S. Mann.		
-144	4	3‡	Do				American National Collection.		
♀ 13 ⁷	31/2	7 ¹ 8	Do				E. N. Buxton.		
138	$4\frac{1}{2}$	71/8	Do				Hon. G. Gordon.		
13	3‡	63	Do				A. F. Williams.		
13	4	5	Do				G. L. Harrison.		
Ş II	$2\frac{1}{2}$	5 %	Do				J. I. S. Whitaker.		

- Owner's measurements.

The ARABIAN GAZELLE (Gazella arabica).

From the edmi the ordinary Arabian race of this gazelle, as met with at Aden, may be distinguished by its smaller size, smoother hair, and darker colour, the general tint of the upper-parts being dark smoky fawn, with a distinct dark flank-band, the central face-band rufous fawn, and a black spot on the tip of the nose. The horns are relatively small. Height at shoulder, 24 or 25 inches. The Aden race has been named G. a. erlangeri; the typical race, G. a. typica, which is from the island of Farsan, in the Red Sea, being lighter, with no dark flank-band. The Sinaitic G. a. rueppelli is coloured like dorcas with the face-markings of a. erlangeri; the nose being reddish brown with a distinct blackish spot.

Distribution.—Western and South Arabia, where it is known as ghasal, its Syrian title being ariel or aiel.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.	Owner.		
$10\frac{4}{3}$	$4\frac{3}{4}$	$4\frac{3}{5}$	Syria	II. H. Youssouf Kamal.		
$-10\frac{1}{2}$	$4\frac{1}{8}$	$4\frac{1}{8}$	S. Arabia	Dr. Albert von Stephani.		
81	4	2	Mocha, South Arabia	British Museum (the late W. T. Blanford).		
- 9 7½	2	4 4	?	Charterhouse Museum.		
$4\frac{7}{8}$	3½	3 5	South Arabia	Sir Victor Brooke's Collection.		
♀ 4½	$1\frac{3}{4}$	$2\frac{1}{2}$?	Col. H. G. C. Swayne.		

⁻ Owner's measurements.



Head of Dorcas Gazelle.

The DORCAS GAZELLE (Gazella dorcas).

Rozal or Hemar, Algerian Arabic. Ghasal, Syria.

The typical race of this species is characterised by the indistinctness of the dark lateral band dividing the fawn of the upper-parts from the white beneath, and the perfectly lyrate form of the horns, which are of medium length, with the middle portion twisted outwardly, and the tips converging towards one another; ears short (125 mm.). Height at shoulder, 21 to 22 inches; total length, about 42 inches. General colour of upper-parts pale fawn, of rather variable tint, with the face-markings distinct.

Distribution.—Typically Lower Egypt; thence eastwards to Palestine and Syria; westwards to the plains of Morocco, Algeria; and southwards to Nigeria and the Sudan.

A.—TYPICAL RACE.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.				Owner.
13½	3 5	$2\frac{1}{4}$?			Sir Edmund G. Loder, Bart.
138	41	2 ³ / ₄	Kordofan				F. P. Nathan.
138	4	$3\frac{1}{2}$	Syria .				H. H. Youssouf Kamal.
-13 ¹ / ₈			Kordofan				Capt. L. Buxton.
13	41	2	Sudan				Capt. B. W. Y. Danford.

⁻ Owner's measurements.

Length on front curve.	Circum- ference.	Tip to	Local	ity.			Owner.
13	4	$3\frac{1}{2}$	El Obeid, Kor	dofan			Capt. J. G. A. Massy.
I 2 7/8	4	$2\frac{1}{2}$	Sudan				Capt. C. P. Heywood.
$12\frac{3}{4}$	$3\frac{7}{8}$	4	Algeria .				A. Louw.
123	4	45	Kordofan .				Capt. J. C. Graham.
123	4	I 🖁	Do				Lord Villiers.
I 2 5/8	4	3	?				P. K. Glazebrook.
I 2 5/8	38	45	Sudan .				LieutGen. Sir B. T. Mahon.
$\mathbf{I} 2 \frac{1}{2}$	4	38	Kordofan .				Capt. P. E. Vaughan.
$12\frac{1}{2}$	3 5	3 3	Southern Sahar	ra			J. I. S. Whitaker.
$12\frac{1}{2}$	4	$2\frac{3}{4}$	Kordofan .				LieutCol. C. J. Hawker.
$12\frac{1}{2}$	$4\frac{1}{2}$	3	Do				Major C. S. Cumberland.
128	3 ³ / ₈		Southern Sahar	ra.			British Museum.
128	3 ³ / ₄	2	Sudan .				H.H. Prince Omar Toussoun.
121	41	3	Palestine .				P. B. Vander Byl.
121	3 1	5	Kordofan .		• .		G. L. Harrison.
121	$4\frac{1}{4}$	$3\frac{1}{2}$	Do				Major J. H. Rivers.
121	$3\frac{1}{2}$	23	Do				Capt. R. A. McClymont.
Ι2	3∄	$3\frac{1}{2}$	Do				Capt. F.L. Livingstone-Learmonth.
12	3 ³ / ₄	$3\frac{1}{2}$	Do				B. Chew.
Ι2	3 3	5 ¹	Do				Sir Robert Harvey, Bart.
12	$3\frac{1}{2}$	$2\frac{3}{4}$	Do				Capt. J. P. V. Hawksley.
12	4	334	Southern Sahar	ra	٠		J. H. Thomas.
II 7/8	3 ³	4 3	?				R. E. Fawkes.
1178	4	4	Kordofan		٠		Major G. Lumsden.
II 78	4	2	Do	٠			Capt. C. E. Hills.
I 1 3	41/4	5 1 8	Do	•	٠	•	Walter Jones.
114	4	4	Do	٠			Norman B. Smith.
113	4	34	Algeria .		٠	٠	E. C. Miller.
118	35	I 3/4	Dongola .	•	•		Capt. W. H. Wilkin.
\$ 114	2 1 6	5 ³ / ₄	Kordofan .		•		Major J. H. Rivers.
11½ 10¾	4 4 1	$3\frac{1}{2}$ $2\frac{1}{4}$	N. Nigeria Lake Chad				C. S. Burnett, Major J. K. Cochrane.
- ♀ 9 ⁷ / ₈		_	Algeria .				A. E. Pease.
¥ 98	***		rigeria .	•			n. 15. I case.

⁻ Owner's measurements.

B.—ABYSSINIAN (ISABELLA) RACE (Gazella dorcas isabella).

Gannai of the natives.

The so-called Isabella gazelle is now regarded as the Abyssinian race of *dorcas*. It is typically characterised by the tips of the horns being strongly hooked inwards so as to form nearly or completely a right angle. The colour of the upper-parts is rufous fawn, with the lateral band well developed. Height at shoulder, about 25 inches.

Distribution.—Abyssinia.

Length on front curve.		Tip to Tip.	Locality.	Owner.	
$10\frac{1}{8}$	$3\frac{3}{4}$	4	Komayli, Abyssinia	British Museum (the late W	7. Т.

ERYTHRÆAN GAZELLE (Gazella littoralis).

Ghazal of the Sudanese.

Rather smaller than *G. dorcas*; general colour pale reddish fawn, with a pale lateral band, and the dark flank-band rich rufous or madder-brown; nose-spot blackish; ears very long, 144 mm. Skull long and low, with the brain-case flatter, the profile from crown to occiput less nearly vertical, and the basisphenoid more inclined than in *dorcas*; auditory bullæ small; row of upper cheek-teeth larger (56 mm.) than in *dorcas* but the molars narrower.

Distribution.—The African coast of the Red Sea, from Suakin northwards, and adjacent parts of Nubian desert.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.		Owner.		
112	4	3	Red Sea Province		H. G. Watson.		
11	35	34	Do.		Capt. the Hon, G. H. Douglas-		
II	$3\frac{7}{8}$	$2\frac{3}{4}$	Do.		W. B. Cotton.		
II	4	$3\frac{1}{2}$	Do.		G. L. Harrison.		
103	3	3 5	Do.		P. H. Thomas.		
IO3	41	45	Do.		Capt. P. C. Lord.		
$10\frac{3}{4}$	4	$4\frac{1}{4}$	Do.		N. C. Cockburn.		
105	34	31/4	Do.		W. Mure.		
105	4	$3\frac{1}{2}$	Do.		W. H. Lindsay.		
$10\frac{1}{2}$	3½	3	Do.		G. C. Whitaker.		
103	$3\frac{1}{2}$	2	Do.		J. H. Miller.		
104	34	4	Suakin		C. E. Russell.		
101	$3\frac{3}{4}$	2 1/2	Sudan		Major H. H. S. Morant.		



Head of Speke's Gazelle.

SPEKE'S GAZELLE (Gazella spekei).

Dhero, Somali.

From the edmi and its allies, with which it agrees in its leading characteristics, this gazelle is readily distinguished by the development of a flabby corrugated elevation on the skin of the nose of both sexes. The coat is thick and the general colour of the upper-parts pale brownish fawn, with the lateral band darker than in the other members of the sub-group. Height at shoulder, from 23 to 24 inches.

The protuberance on the nose is connected with the sexual function; in dead specimens it exhibits a slight cavity beneath the skin which can be inflated by blowing air into the nostrils, and it seems therefore capable of distension during life.

Distribution.—The plateau of Somaliland.

Length on front curve.	Circum- ference.	Tip to Tip.	Loca	dity.		Owner.
$12\frac{1}{2}$	4	5 ⁷ 8	Somaliland	1.		Col. P. Schletter.
113	3 3	38	Do.			A. F. Williams.
I I $\frac{3}{4}$	$3\frac{3}{4}$	4 5	Do.			Col. H. G. C. Swayne.
II 5	3 ³ / ₄	$2\frac{1}{2}$	Do.			Gen. Sir Arthur Paget.
I I ½	4 ³ / ₈	23	Do.			T. W. H. Clarke.
I I ½	$3\frac{3}{4}$	34	Do.			Capt. A. H. W. Temple.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.			Owner.
II3	38	$2\frac{5}{8}$	Somalilan	đ.		Capt. H. du B. O'Neill.
111	4	$4\frac{1}{4}$	Do.			Col. H. D. Olivier.
111	4	4	Do.			W. H. Cobb.
I I 1 1	$4\frac{1}{8}$	4	Do.			Capt. H. W. Thorpe.
I I 1/4	$3\frac{1}{2}$	4	Do.			A. de L. Long.
I I 1/4	4	4	Do.			Major P. C. Elliott-Lockhart.
I I 1	4	$4\frac{1}{4}$	Do.			Capt. F. R. Tarleton.
-II ₄	4	$5\frac{1}{4}$	Do.			R.E. Mess, Roorkee.
113	4	5‡	Do.			C. Liddeli.
11	4	$4\frac{1}{2}$	Do.			J. H. Whitehouse.
11	4	4	Do.			A. H. Straker.
11	3 g	5	Do.			LieutCol. H. C. Morland.
11	4 ¹ / ₈	35	Do.			Lord Delamere.
ΙΙ	$3\frac{1}{2}$	4	Do.			Capt. A. E. H. Breslin.
11	4	$2\frac{3}{4}$	Do.			Dr. R. E. Drake-Brockman.
103	4	$4\frac{3}{4}$	Do.			P. H. Thomas.
103	34	3 ³ / ₄	Do.			Sir Edmund G. Loder, Bart.
103	3 ² / ₄	45	Do.			J. H. Miller.
103	45	51	Do.			Major B. R. M. Glossop.
103	4	4	Do.			R. McD. Hawker.
103	3 ⁷ / ₈	3	Do.			C. N. Welsh.
103	34	$3\frac{3}{4}$	Do.	٠		E. Lort-Phillips.
103	4	$3\frac{3}{4}$	Do.			Major B. Vincent.
103	4	$4\frac{3}{4}$	Do.			A. Louw.
103	4	31	Do.			Col. E. St. C. Pemberton.
♀9½	2 7	34	Do.			T. W. H. Clarke.

⁻ Owner's measurements.



Head of Pelzeln's Gazelle.

PELZELN'S GAZELLE (Gazella pelzelni).

Dhero, Somali.

This species, the lowland gazelle of Somaliland, is nearly related to the last, from which it differs by the absence both of the corrugated elevation on the nose and of the black spot on the muzzle. It is also slightly larger than Speke's gazelle, the height at the shoulder being about 25 inches; and its colour is somewhat more rufous, the light flank-band being distinct, and the dark band rufous brown, only slightly darker than the back, without any tendency to blackness. The dark and light bands on the cheeks are relatively short and indistinct.

Distribution.—The plains of northern Somaliland, bordering the sea. Within fifty miles of the shore this gazelle is exceedingly numerous, and may often be seen in large herds.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.				Owner.
14	$4\frac{1}{2}$	415	Somaliland				Sir Edmund G. Loder, Bart.
$13\frac{1}{2}$	$3\frac{3}{4}$	$4\frac{3}{4}$	Do				W. Mure.
13	41	4 3	Do.		,		A. de L. Long.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.				Owner.
13	4	61	Somaliland			٠	H. D. Briggs.
I 2 $\frac{7}{8}$	$3\frac{1}{2}$	58	Do.				Capt. H. McLear.
$I2\frac{7}{8}$	$3\frac{7}{8}$	$5\frac{3}{4}$	Do.				Capt. H. C. Dobbs.
I 2 ½	41	48	Do.				R. P. Dennistoun-Webster.
121	3 3	$4\frac{1}{4}$	Do.				Col. H. G. C. Swayne.
121	4 1/8	$5\frac{1}{2}$	Do.				Lord Delamere.
I 2 1/4	4	4 5	Do.				Major K. L. W. Mackenzie.
12	31/4	$5\frac{3}{4}$	Do.				Capt. F. W. Richey.
12	$3\frac{3}{4}$	$4\frac{1}{2}$	Do.				Major A. G. Stevenson.
I 2	$3\frac{3}{4}$	51/4	Do.				Viscount Edmond de Poncins.
I 2	$3\frac{1}{2}$	5‡	Do.				Major C. R. Kelly.
113	4	5	Do.				Lieut. H. V. B. Firman, R.N.
113	4 1 8	4	Do.				Dr. R. E. Drake-Brockman.
I I §	4	$3\frac{1}{2}$	Do.				Capt. H. du B. O'Neill.
I I ½	$3\frac{1}{2}$	$5\frac{1}{2}$	Do.				T. W. H. Clarke.
II $\frac{1}{2}$	$3\frac{1}{2}$	$4\frac{1}{4}$	Do.				LieutCol. H. C. Morland.
II $\frac{1}{2}$	$3\frac{1}{2}$	5	Do.				Capt. W. H. Williamson.
II $\frac{1}{2}$	34	$4\frac{1}{4}$	Do.				C. S. Mann.
II $\frac{1}{2}$	33	48	Do.				W. F. Whitehouse.
II $\frac{1}{2}$	$3\frac{1}{2}$	$4\frac{1}{2}$	Do.				Capt. G. W. Denison.
₽9	,		Do.				C. S. Mann.
\$ 8 <u>1</u>	$2\frac{1}{8}$	$3\frac{1}{2}$	Do.				W. F. Whitehouse.



Horns of Loder's Gazelle.

The RHIM or LODER'S GAZELLE (Gazella leptoceros).

Rhim, Arabic.

Although originally described so long ago as the year 1842, very little was known of this gazelle till specimens were procured by Sir E. G. Loder, and described as a new species under the name of G. loderi. Further investigation proved them to be inseparable from the species named by F. Cuvier. This species is easily recognisable by the long and slender form of the nearly straight horns of the bucks, and the very pale tone of colouring of the upper-parts, which may be described as pale sandy fawn, with the characteristic gazellemarkings only indistinctly defined. On the face the dark streaks are sandy instead of rufous, and the light bands on the flanks are almost imperceptible, while the dark ones below them are pale sandy with the very slightest tinge of brown; the tail being sandy at the base, and gradually darkening to brownish black towards the tip. In the male the horns are about twice the length of the head, very slender, and closely and heavily ridged almost to the tips. Knee-brushes very small. Height at shoulder, about 28 inches. Weight, 34 lbs.

Distribution.—The desert tracts of the interior of Western Egypt, thence extending southwards into Nubia and Sennar; represented by a distinct race on the sand-dunes of the Algerian and Tunisian Sahara.

A.—TYPICAL RACE.

Length on front curve.		Tip to Tip.	Locality.		Owner.
131	41	5 %	Fayum, Egypt	. (Capt. S. S. Flower.

B.—TUNISIAN RACE (G. leptoceros loderi).

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.		Owner.
15 ⁷ / ₈	$3\frac{3}{4}$	$7\frac{1}{2}$	Tunisian Sahara		Sir Edmund G. Loder, Bart.
15 ⁷ 8	3½	6‡	South of Biskra		Dr. Dawtrey Drewitt.
153	4	$4\frac{1}{4}$	Tunisian Sahara		J. I. S. Whitaker.
15	34	7 3	Algerian Sahara		G. L. Harrison.
15	$3\frac{1}{2}$	$4\frac{1}{4}$	3		J. C. Phillips.
141/2	$3\frac{1}{2}$	$5\frac{1}{2}$	South of Biskra		American National Collection.
147	$3\frac{7}{8}$	4 3	Algerian Sahara		Sir Abe Bailey.
148	$3\frac{1}{2}$	8	?		C. S. Mann.
141	3 ³ / ₄	$6\frac{1}{2}$	Algerian Sahara		H.H. Prince Omar Toussoun.
144	$3\frac{1}{2}$	101	Do		Sir Edmund G. Loder, Bart.
14	3 ⁷ / ₈	3	Do		Hon. R. A. Ward.
13 5	3 ⁵ / ₈	$5\frac{1}{2}$	Do		W. E. Pease.
13½	3 ³ 4	8컄	Tunisian Sahara		Sir Edmund G. Loder, Bart.
13½	3½	10	Algerian Sahara		British Museum.
134	$3\frac{1}{2}$	$3\frac{3}{4}$?		A. Louw.
131	3½	$5\frac{3}{4}$	Tunisian Sahara		J. I. S. Whitaker.
Ç11 <u>₹</u>	2	3 8	Do.		Sir Abe Bailey.



Head of Heuglin's Gazelle.

HEUGLIN'S GAZELLE (Gazella tilonura).

Tel-Badu, Tigri.

This well-marked species represents a small sub-group in which the dark band on the flanks is very strongly defined, and black in colour; the present species being distinguished from its allies by the abrupt inward hooking of the tips of the horns. The general colour is deep sandy, with the central face-band but little darker than the back, no black nose-spot, and the tail sandy at the base but black elsewhere. Height at shoulder, about 27 inches.

Distribution.—Bogosland, Abyssinia, Sennar, and Northern Bahr-el-Ghazal.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality	7.	Owner,
I I 7/8	41	$3\frac{1}{2}$	Atbara River		W. B. Cotton.
I I $\frac{3}{4}$	5	2	Sudan .		Major F. J. L. Howard.
II $\frac{1}{2}$	$4\frac{1}{2}$	2	Atbara River		W. B. Cotton.
118	4	7	Sudan .		H. Leney.
II	4	3 ½	Do		Lord Villiers.
IO ⁷ 8	$4\frac{1}{2}$	$2\frac{1}{2}$	Do		H. Boughton Leigh.
I03/4	34	$4\frac{1}{2}$?		E. Lort-Phillips.
$10\frac{3}{4}$	4	$2\frac{1}{8}$	Bogosland		British Museum.
$10\frac{1}{2}$	48	3	Near Kassala		Prince Colloredo Mannsfeld.
101	$4\frac{1}{2}$	$3\frac{1}{2}$	Sudan .		C. E. Russell.
101	4 ¹ / ₈	41	Basaland		Hon. Walter Rothschild.
101	4 1 8	2 ⁷ / ₈	?		Col. Ralph Vivian.
10	4 8	$2\frac{1}{2}$	Setit Valley		Earl of Sefton.
₽7	$2\frac{1}{2}$	3 7	Do.		Do.



Skull and Horns of Red-fronted Gazelle,

The KORIN or RED-FRONTED GAZELLE (Gazella rufifrons).

Seni, Gambian.
Bavewa, Hausa.

El Hamra, Dinka. Ngār, Sudani.

This medium-sized and rather stoutly built species agrees with Heuglin's gazelle in the narrow dark brown flank-band, but differs by the absence of a distinct inward hooking of the tips of the horns. The general colour of the upper parts is deep sandy rufous, brightening into rich rufous on the forehead and face, where there is no nose-spot. The tail, with the exception of the sandy upper surface of the basal portion, is black. Horns relatively small, regularly divergent, curving at first slightly backwards and then forwards, heavily ridged till the terminal two or three inches.

Distribution.—Senegal, Gambia, Northern Nigeria, Kordofan, and White Nile, to Northern Uganda. The typical race is from Gambia and Nigeria; the eastern race being distinguished as G. r. lævipes, with which the so-called G. salmi is identical.

A.—TYPICAL RACE (G. rufifrons typica).

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.	Owner.
$13\frac{1}{4}$	48	5 7	Northern Nigeria	Capt. C. V. Boyle.
121	5	$4\frac{1}{2}$	Do.	Capt. L. C. Brodie.
12	$4\frac{1}{4}$	$5\frac{3}{4}$	Do.	Capt. A. C. Aubin.
113	41	33	Do.	Capt. G. Bonham-Carter.
II 1 2	$4\frac{3}{4}$	$4\frac{1}{2}$	Do.	H. C. Bridges.
$IJ\frac{1}{2}$	4 5	$4\frac{3}{4}$	Do.	C. Francis.
11½	41	$4\frac{3}{4}$	Do.	Capt. G. C. Kelly.
$II_{\frac{1}{4}}^{1}$	$4\frac{1}{2}$	4 3	Do.	Capt. C. C. West.
111	41	4 ³ / ₄	Do.	F. B. Gall.
111	$4\frac{3}{4}$	4	Do.	Major R. McDouall.
ΙΙ	$4\frac{1}{2}$	31/4	Do.	C. S. Burnett.
II	$4\frac{1}{4}$	45	Do.	Major J. G. Browne.
ΙΙ	4 ³ / ₄	45	Do.	Capt. Lord Henry Seymour.
♀9₺	$2\frac{1}{2}$	$4\frac{1}{2}$	Do.	Capt. L. C. Brodie.

B.—EASTERN RACE (G. rufifrons lævipes).

	20,	222022	1014 1011-07	٠.	1 (11111	ons invipos).
Length on front curve.	Circum- ference.	Tip to Tip.	Locality			Owner.
13 7	54	$7\frac{1}{2}$	White Nile			LieutCol. J. W. Yardley.
13 ¹ / ₄	44	$6\frac{7}{8}$	Kordofan .			B. Chew.
13	$5\frac{1}{2}$	8	White Nile			F. W. Greswolde-Williams.
13	48	48	Do.			Capt. R. F. Balfour.
13	$4\frac{1}{2}$		Do.			Capt. A. H. Vivian.
$I2\frac{7}{8}$	41	$5\frac{1}{2}$	Kordofan .			Col. A. Colville.
$12\frac{3}{4}$	$4\frac{1}{2}$	7 3	Do			Capt. C. E. Hills.
123	$4\frac{7}{8}$	7	White Nile			Capt. B. W. Y. Danford.
125	48	7	Do.			R. McD. Hawker.
12 <u>5</u>	4 3	41/4	Kordofan .			Capt. B. H. S. Romilly
I 25	48	65	White Nile			H. Cookson.
$12\frac{1}{2}$	5	5	Do.			Capt. E. Berry.
I21/2	$4\frac{3}{4}$	61	Do.			Capt. J. C. Graham.
121/2	$4\frac{1}{2}$	6	Do.			J. C. Phillips.
I 2 ½	5	$5\frac{1}{2}$	Kordofan .			Sir Robert Harvey, Bart.
12 3	5	44	White Nile			C. Cookson.
12 3	5	$5\frac{3}{4}$	Do.			R. H. Willan.
I 2 1/4	418	5 ³ 8	Do.			LieutGen. Sir B. T. Mahon.
$12\frac{1}{4}$	$4\frac{1}{2}$	$5\frac{3}{4}$	Do.			C. Bower Ismay.
121/8	$4\frac{3}{4}$	$5\frac{3}{4}$	Do.			Col. H. W. Guinness.
12	$4\frac{3}{4}$	6	Do.			Norman B. Smith.
12	45	5§	Do.			Major J. F. Wolseley.
12	44	6	Do.			Lieut. W. B. Drury, R.N.
12	$4\frac{3}{4}$	51	Do.			T. D. M. Cardeza.
12	$4\frac{3}{4}$	44	Kordofan .			LieutCol. C. J. Hawker.
12	5	6	Sudan .			A. L. Butler.
♀ 10½	2 3 8	$2\frac{3}{4}$	Kordofan .			G. L. Harrison.



Head of Mongala Gazelle. From the type specimen.

MONGALA GAZELLE (Gazella albonotata).

Closely allied to G. thomsoni, of which it may be merely a race.

Distribution.—According to the late Capt. H. S. Logan, from Gondokoro, in Uganda, to Bor, in the Mongala district of the Sudan, on the Abyssinian side of the Bahr-el-Gebel.

Length on front.	Circum- ference.	Tip to Tip.	Locality.	Owner.
$12\frac{3}{4}$	44	64	Mongala	Capt. P. E. Vaughan.
I 2 5	$4\frac{3}{4}$	4	Do	P. Niedieck.
I 2 1/8	4 3 8	$6\frac{1}{4}$	Do	Major A. W. Jennings Bramly.
12	5	3	Do	Duke of Alba.
12	4 3	5	Do	Capt. E. E. B. Mackintosh.
117	5	5	Do	Capt. R. F. Balfour.
$II\frac{3}{4}$	41	5	Do	Capt. B. W. Y. Danford.
114	41	34	Do	Major P. M. Dove.
11	41	4.1	Do	Capt. P. A. Wilson.
107	$4\frac{1}{2}$	3	Pibor River	Col. J. J. Asser.
10%	$4\frac{1}{2}$	38	Mongala .	J. V. Colby.
10	45	5 ⁷ / ₃	Do	Hon. Walter Rothschild.
♀ 4월	I ½	I ½	Do	(Type specimen.) C. Logan.



Heads of Thomson's Gazelle.

THOMSON'S GAZELLE (Gazella thomsoni).

Swalla, Swahili. Engoli, Masai.

The distinct black nose-spot, the pure white eye-streak, and the great depth of the black flank-band serve to distinguish this species from G. rufifrons, with which it agrees in the general form of the horns. The prevailing colour of the upper parts is deep sandy rufous, with all the markings well developed and sharply defined; the central face-streak being a deeper rufous mingled with black, and having a black spot, and the light flank-band present, although only slightly paler than the back. There is also a narrow black band bordering the white on the sides of the rump. The horns are long, and rather like those of the Indian gazelle on an enlarged scale. Height at shoulder of males, from about 25 to 27 inches; of females, about $23\frac{1}{2}$ inches. Weight of bucks, from 52 to 62 lbs.; of does, about 32 lbs. The species has been divided by a German naturalist into a number of races, but at least many of these can scarcely be regarded as valid.

Distribution.—The interior districts of British and German East Africa, from Lake Rudolf southwards to Irangi.

Length on front curve.	Circum- ference.	Tip to Tip.	Local	lity.		Owner.
$16\frac{1}{2}$	5	4‡	East Africa			H. Fowler.
16}	$4\frac{1}{2}$	5	Do.			Earl of Kingston.
16	4 5	$4\frac{1}{2}$	Do.			W. A. Baird.
16	4 ³ / ₄	$\frac{72}{38}$	Do.			Lady Margaret Loder.
15 7	$4\frac{1}{2}$	58 58	Do.			J. G. Millais.
153	$4\frac{1}{2}$	58 7	Do.			Sir Richard Dane.
12 4		$\frac{7}{4\frac{1}{8}}$	Do.		,	R. de la Huerta.
	5		Do.			H. Irvine.
153	51	4 ³ / ₄			•	W. N. McMillan.
15∄	4 3	6	Do.	٠	•	
154	4 ⁷ / ₈	$4\frac{1}{2}$	Do.	٠		C. W. Turner.
15 3	5	4 3	Do.			W. P. Lowe.
15불	$4\frac{1}{2}$	$5\frac{1}{2}$	Do.			Major H. B. Dalgety.
15 §	4 5	31/8	Do.			C. J. Murray.
151	$4\frac{1}{2}$	$6\frac{1}{2}$	Do.			E. M. Crosfield.
$15\frac{1}{2}$	5	$3\frac{7}{8}$	Do.			F. W. Belt.
15½	4 3	5½	Do.			Duke of Peneranda.
15½	$4\frac{3}{4}$	34	Do.			Sir F. J. Jackson.
15½	$4\frac{1}{2}$	3	Do.			Capt. M. L. Pears.
15½	41	5≩	Do.			G. Henry.
158	4 3	5	Do.			Stephenson R. Clarke.
158	$5\frac{1}{2}$	$4\frac{1}{8}$	Do.		٠	G. P. L. Cosens.
158	48	3	Do.		•	The Master of Belhaven.
151	4 3	51	Do.		٠	N. C. Cockburn.
154	43	4 3	Do.		•	British Museum (Sir F. J. Jackson).
154	$4\frac{1}{2}$	41/8	Do,	٠		Major A. E. Smith.
154	4 ³	5	Do. Do.			Guy Fenwick.
151	5	48		•	•	C. B. C. Storey. Gerard Buxton.
15½ 15½	5 4 ¹ / ₂	3 ¹ / ₄ 11 ³ / ₄	Do. Do.	•		F. C. Cobb.
15‡	42 43	6	Do.		٠	Sir J. Hume Campbell, Bart.
15g 15g	$\frac{44}{48}$	5 7	Do.		٠	Lord Basil Blackwood.
15½	48 4 5	58 6	Do.	•		Capt. C. Brook.
151	5 t 1	5	Do.			I. N. Dracopoli.
151	5	6‡	Do.			Major W. E. Stobart.
15	4 3	4	Do.	·	Ċ	H. B. Tate.
15	41/2	54	Do.			Major C. U. Price.
15	41/4	53	Do.			B. Dominick.
15	5	4	Do.			J. F. Franks.
15	41	45	Do.			Capt. W. H. Wilkin.
15	5	5 3	Do.			F. Santos Saurez.
15	45	4 ³ / ₈	Do.			Capt. R. A. McClymont.
15	5	4	Do.			W. J. Barry.
15	5	6	Do.			Lord Wodehouse.

OWNER'S MEASUREMENTS:

165	$5\frac{1}{2}$	54	German East	Africa	S. E. White.
16	42	2	East Africa		C. S. Mann.
$96\frac{1}{2}$	2	21/2	Do.		C. Steuart Betton.



Skull and Horns of Grant's Gazelle,

GRANT'S GAZELLE (Gazella [Nanger] granti).

Suara, Swahili. Ngoli, Nodorobo.

This handsome species is the first of a group of gazelles characterised by their large size and by the fawn colour of the back being encroached upon to a greater or less degree by the white of the rump. In this species the horns are very long and typically lyrate; there is a dark streak on the front border of each side of the rump-patch; the middle face-streak is chestnut, with a black nose-spot; and the tail, with the exception of the black crest, is either wholly white, or sandy above and white beneath. On the neck and back the hair has a peculiar wavy appearance, recalling that of watered silk. Height at shoulder, from about 32 to 34 inches; weight of male, from about 150 to 165 lbs., when cleaned, about 115 lbs.

Distribution.—East Africa; throughout Masailand, Kilimanjaro, north of Baringo, Mount Elgon, and the Suk country; generally on open grass-lands. In G. granti typica, of the interior of East Africa, the flank-bands are faint in the adult, and the fawn area does not extend far on to the white of the rump-patch. In the Usukuma race, G. g. robertsi, the horns show a peculiar outward twist, so that their points are far apart. In the Tana G. g. petersi the stature is smaller, the horns are nearly straight, and the fawn

of the back extends along the middle of the upper surface of the tail. In the Loroghi G. g. notata the flank-bands are very distinct with a dark one above and below the light one, and the horns are nearly straight. The Lado G. g. brighti is a small race, without dark flank-bands, and a narrow black border to the rumppatch. The Abaya G. g. laccuum, which is also rather small, has a dark flank-band in the young, and horns of the petersi type.

A .- Many of the following belong to the TYPICAL RACE.

Length on front curve.	Circum- ference.	Tip to Tip.	Loc	cality.		Owner.
29	7	14	East Africa			R. O. Preston.
29	$6\frac{1}{2}$	$20\frac{3}{4}$	Do.			Sheffield Neave.
$28\frac{7}{8}$	6 7	133	Do.			A. Fowler.
$28\frac{3}{4}$	$6\frac{3}{4}$	17 5	Do.			Capt. F. W. Barrett.
281	65	I 5 1/8	Do.			Sir F. J. Jackson.
281	$6\frac{1}{2}$	$13\frac{1}{2}$	Do.			Capt. E. C. Hamilton.
281	7	$17\frac{1}{2}$	Do.			Lord Wodehouse.
28	7	21	Do.			K. V. Painter.
28	$7\frac{1}{2}$	16	Do.			· Douglas M'Douall.
28	$6\frac{3}{4}$	24 ⁵ / ₈	Do.			Capt. N. E. Playfair.
27 ⁷ / ₈	6 §	183	Do.			H. C. V. Hunter.
$27\frac{3}{4}$	$6\frac{3}{4}$	14	Do_{\bullet}			J. Jay White.
$27\frac{3}{4}$	63	ΙΙ	Do.			C. C. Wilson.
$27\frac{3}{4}$	7	18	Do.			Major G. E. Tuson.
$27\frac{3}{4}$	71	16§	Do.			W. H. Levy.
$27\frac{1}{2}$	$6\frac{1}{2}$	$6\frac{1}{2}$	Do.			Capt. A. Neave.
$27\frac{1}{2}$	7	17	Do.			Capt. D. H. Macdonell.
$27\frac{1}{2}$	74	13	Do.			LieutCol. G. S. McLoughlin.
$27\frac{1}{2}$	7	$17\frac{3}{4}$	Do.			R. B. Loder.
278	63	$20\frac{5}{8}$	Do.			H. Fowler.
271	$6\frac{3}{4}$	8^{3}_{4}	Do.			R. B. Seager.
$27\frac{1}{4}$	$6\frac{1}{2}$	187	Do.			Sir Robert Harvey, Bart.
271	7	19	Do.			Marquis of Waterford.
271	7	16‡	Do.			E. H. Litchfield.
27	7	151	Do.			A. J. A. Douglas.
27	7	$I2\frac{1}{2}$	Do.			H. T. Barclay.
27	7	20	Do.			Major Lord J. S. Cavendish.
27	$6\frac{3}{4}$	141	Do.			Dr. A. E. Herz.
27	$7\frac{1}{2}$	143	Do.		,	L. M. Douglas.
27	7	163	Do.			Hugh G. Barclay.

Length on front curve.	Circum- ference.	Tip to Tip.	I	ocality.			Owner.
27	$6\frac{1}{2}$	$22\frac{1}{2}$	East Africa				G. Williams.
27	$6\frac{1}{2}$	114	Do.				C. W. Fuller.
27	7	$14\frac{7}{8}$	Do.				C. Fahnestock.
27	$6\frac{1}{2}$	10	Do.				Sir Owen Phillips.
263	74	$14\frac{1}{2}$	Do.				J. G. Millais.
$26\frac{3}{4}$	7	$14\frac{1}{2}$	Do.				A. Bayley-Worthington.
$26\frac{3}{4}$	$6\frac{1}{2}$	$12\frac{1}{2}$	Do.				Capt. W. H. Wilkin.
			OWNER'S	MEAS	SUR	EM	ENTS.
301	7월	20	Kilimanjaro				Major F. A. Diekinson.
$28\frac{1}{2}$	7	15₹	Do.				C. S. Mann.
♀ 26½	$5\frac{1}{2}$	194	Do.				Nairobi Club.



Skull and Horns of G. granti robertsi.

B.—USUKUMA RACE (G. granti robertsi).

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.		Owner.
29	$6\frac{3}{4}$	$23\frac{1}{2}$?		W. N. McMillan.
28		$28\frac{1}{2}$	Kedong Valley		Capt. R. S. Hart.
28	6‡	29	?		Capt. C. Brook.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality	7•			Owner.
*27½	$6\frac{1}{2}$	22	Lemek Valle	у			Capt. the Hon. O. H. Stanley.
$26\frac{3}{4}$	61/2	201	East Africa			٠	Mrs. A. K. Muir.
26 <u>3</u>	61/4	20	Do.				C. Bower Ismay.
26§	6	$22\frac{1}{2}$	Do.		٠		H. Johnson.
261	5 3	23 5	Do.				A. Fowler.
26‡	$6\frac{1}{2}$	251	Do.				H. Sampson.
26 1	6 1 /8	25 ³ / ₈	Do.				H. Fowler.
26‡	6 3	193	Do.				H. R. M'Clure.
26 <u>1</u>	6	$17\frac{3}{4}$	Do.				G. P. L. Cosens.
261	6	$26\frac{1}{2}$	Do.				R. B. Muir.
26 <u>1</u>	6‡	24	Do.				J. F. Franks.
$25\frac{1}{2}$	6	187	Do.				Capt. H. C. S. Ashton.
25 ³ / ₈	5 7 /8	$25\frac{3}{4}$	Do.				Capt. H. C. Hart-
$24\frac{3}{4}$	6	$18\frac{1}{4}$	Do.				F. C. Stern.
$24\frac{1}{2}$		28	German East	Afri	ca		British Museum (F. Russell Roberts and G. Blaine).
		OW	VNER'S ME	ASU	REM	EN	TS.
28½	$5\frac{1}{2}$	$38\frac{1}{2}$	Sotik .				R. J. Cuninghame.

* Determination provincial.

C.—TANA RACE (G. granti petersi).

Distribution.—Coast districts of East Africa.

Length on front curve.		Tip to Tip.	Locality.			Owner.
$23\frac{3}{4}$	$6\frac{1}{2}$	11	E. Africa .			Capt. R. Meinertzhagen.
22 1/2	63	8	Voi .			Sir Edmund G. Loder, Bart.
2218	63	5 ½	Mherereni			British Museum (Sir F. J. Jackson).
22	53	$7\frac{1}{8}$	Tana Valley			G. Blaine.
$21\frac{3}{4}$	$6\frac{1}{2}$	ΙΙ		?		Major L. Boyd-Moss.
2 I ½	$6\frac{7}{8}$	83		?		T. F. V. Buxton.
21‡	62	61/2		?		C. S. Mann.
21	61	9	Tana Valley			C. H. Young.
201	5‡	91/2	Do.			Capt. C. Hankey.
$20\frac{1}{2}$	53	58	De.			Major H. De Prée.



Head of Scemmerring's Gazelle.

The AOUL or SEMMERRING'S GAZELLE (Gazella [Nanger] semmerringi).

Aoul, Somali. Meidafihel, Abyssinian. Maédedo, Danakil. Ariel. Sudani.

In this species the white of the rump-patch intrudes more into the fawn-area than in *granti*; there is generally no black streak dividing the sides of the rump-patch from the fawn of the body, the face-markings are black, and the horns, which are shorter and more massive than in *granti*, hook inwards at the tips. The tail, except for its black crest, is white. Height at shoulder, about $35\frac{1}{2}$ inches. Weight, clean, about 90 lbs.

Distribution.—The Abyssinian coast of the Red Sea, Berber, East Sennar, Danakil, Bora-Gallaland, and Somaliland; in the latter country occurring all over the Haud and Ogaden. The North Somali G. s. berberana is larger and darker than the typical form, with differently curved horns.

A.—SOMALI RACE (G. sæmmerringi berberana).

Length on front curve.	Circum- ference.	Tip to Tip.	Lo	cality.		Owner.
23	48	$13\frac{1}{2}$	Somaliland			G. H. Kirkpatrick.
21	51	10	Do.			Major P. H. G. Powell-Cotton.

Length on front curve.	Circum- ference.	Tip to Tip.	Lo	cality.		Owner.
2 I	64	4 ³	Somaliland			Col. V. M. Stockley.
20 3	63		Do.			W. N. McMillan.
$20\frac{3}{4}$	$5\frac{3}{4}$	35	Do.			G. H. Cheetham.
201	6	45	Do.			Norman B. Smith.
201	5½	$7\frac{1}{2}$	Do.			Capt. A. E. Burnett.
201	$5\frac{3}{4}$	3	Do.			Capt. J. W. C. Kirk.
201	5‡	63	Do.			Capt. A. E. H. Breslin.
201	$5\frac{1}{2}$	81/2	Do.			Major F. Rowley.
20	5‡	5 §	Do.			Hon. Walter Rothschild.
20	54	4	Do.			LieutCol. J. W. H. Flanagan.
20	6	71	Do.			A. Louw.
20	$5\frac{1}{4}$	$5\frac{1}{2}$	Danakil	٠	٠	Viscount Edmond de Poncins.
♀-20		54	Somaliland			A. E. Pease.
20	$5\frac{1}{2}$	$5\frac{1}{4}$	Do.			Capt. H. du B. O'Neill.
20	$5\frac{7}{8}$		Do.			MajGen. Sir A. N. Rochfort.
20	5‡	$10\frac{7}{8}$	Do.			G. Blaine,
$19\frac{3}{4}$	51	63	Do.			Sir Abe Bailey.
192	$5\frac{1}{2}$	· 5 5	Do.			T. W. H. Clarke.
$19\frac{1}{2}$	5 19 ō	2	Do.			Sir Edmund G. Loder, Bart.
19½	$5\frac{1}{2}$	4 ³ / ₄	Do.			Major J. J. Richardson.
19½	$5\frac{1}{2}$	45	Do.			Count J. Potocki.
192	51	154	Do.			R. McD. Hawker.
194	51/4	$4\frac{1}{2}$	Do.			Major B. L. Carew.
19‡	$5\frac{3}{4}$	7 ≟	Do.			Capt. H. C. Dobbs.
19‡	54	$7\frac{3}{4}$	Do.			P. K. Glazebrook.

⁻ Owner's measurements.

B.—TYPICAL RACE (G. sæmmerringi typica).

Length on front curve.		Tip to Tip.		Loc	cality	•	Owner.
17	5	5	Sudan .			,	Count J. Potocki.
163	5‡	10	Do				J. H. Butler.
$16\frac{1}{2}$	54	31/2	Do				Prince Colloredo Mannsfeld.

Length on	Circum-	Tip to Tip.		Locali	tv.		Owner.
front curve.	ference.		G 1				C.D. E
16 §	5	$5\frac{1}{2}$	Sudan .	•	٠	٠	C. D. Eyre.
164	6	81/2	Do	•		٠	W. H. Lindsay.
16	54	5	Do	٠			Commdr. A. H. Home, R.N.
16	5	$4\frac{1}{2}$	Do				Capt. N. A. Orr-Ewing.
16	5	3 1	Do				G. L. Harrison.
16	$4\frac{1}{2}$	54	Do				Col. A. Colville.
16	$5\frac{1}{2}$	3	Do				H. G. Watson.
153	$5\frac{1}{2}$	44	Do				W. H. Diggle.
154	$5\frac{1}{2}$	$5\frac{3}{4}$	Do				Major H. H. S. Morant.
155	$5\frac{1}{2}$	5	Do				C. Bower Ismay.
I 5½	54	$3\frac{3}{4}$	Do.				Capt. P. C. Lord.
$15\frac{1}{2}$	5울	5	Do				Col. Ralph Vivian.
151	5	5	Do	•			Major Lord J. S. Cavendish.
I 5½	$5\frac{1}{4}$	$6\frac{3}{4}$	Do				Earl of Sefton.
♀ 15‡	2 7	7 ³	Do				The late LieutCol. Hon. W. Coke.
154	5	$4\frac{1}{2}$	Do				Miss C. Buxton.
15	_、 5	4 ³ / _*	Do				H. S. Smiley.
15	5	6	Suakin.				Hon, Walter Rothschild.
15	$5\frac{1}{2}$	63	Sudan .				F. W. Greswolde-Williams.
15	5 %	2 5 2 5	Do				Hugh C. E. Ross.

C.—BORANI RACE (G. sæmmerringi butteri).

Length on Circum- front curve. Circum- ference. Tip to Tip.		L	ocality.	Owner.			
131	4 ³ / ₄	$3\frac{1}{2}$	Boraland				A. E. Butter.



Skull and Horns of Addra Gazelle.

The DAMA, MHORR, or ADDRA GAZELLE (Gazella [Nanger] dama).

Addra, Dongolese. Riël, Dinka. Ariel, Sudani.

The largest species of the genus Gazella, standing 36 or 37 inches at the shoulder, and characterised by the white of the rump including the tail (which may be tipped with fawn), coupled with the absence of a black border to the rump-patch and of a dark flank-band, and the forward hook of the tips of the horns. In the mhorr or Moroccan race (G. d. mhorr) of Southern Morocco there are dark face-markings, and the rufous of the body extends down the legs. In the Senegambian G. d. permista the rufous occupies a smaller area on the body, and there is only a narrow bridge connecting the rufous of the back with that of the hind-legs, while in the fore-legs the upper part is wholly white, and there is only a rufous streak in front below the knee. The typical G. d. typica, probably from Lake Chad, connects the mhorr with the addra or Kordofan race (G. d. ruficollis), in which the rufous is limited to the neck and a saddle-shaped area on the back.

Distribution.—The desert regions of northern, western, and north-eastern Africa, from Nigeria and Senegambia through Morocco to Kordofan.

A.—TYPICAL RACE (G. dama typica).

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.			Owner.		
147	$5\frac{3}{4}$	$8\frac{1}{2}$	Lake Chad			C. S. Burnett.		
14	$6\frac{1}{4}$	5‡	Do.			Capt. L. C. Brodie.		
135	64	9	Do.			Capt. G. Bonham-Carter.		
133	$5\frac{1}{2}$	$6\frac{3}{4}$	Do.			Capt. A. B. Baillie-Hamilton.		
134	53	$7\frac{1}{2}$	Do.	٠		Major J. B. Cockburn.		
133	$5\frac{3}{4}$	$3\frac{1}{4}$	Do.			Major D. F. MacCarthy Morrogh.		
13 5	$5\frac{7}{8}$	85	Do.			J. Goold-Adams.		
13½	54	$6\frac{1}{2}$	Do.			F. Beccles Gall.		
138	$5\frac{3}{4}$	3	Do.			Capt. Lord Henry Seymour.		
121	58	6	N. Nigeria			Capt. G. C. Kelly.		
♀ 121		$3\frac{1}{2}$	Lake Chad			C. S. Mann.		
121	5 ³ / ₄	$6\frac{3}{4}$	Do.			Sir F. J. Lugard.		

B.—SENEGAMBIAN RACE (G. dama permista).

Length on front curve.			Locality.	Owner.
81	$3\frac{1}{2}$	5불	?	Hon. Walter Rothschild.

C.—MHORR or MOROCCAN RACE (G. dama mhorr).

	ength on Circum- Tip to ont curve. ference. Tip.		Locality.	Owner.
I I 3	6	3 ³ / ₄	Wednoon, Mogador .	British Museum (W. Willshire).

D.-ADDRA or KORDOFAN RACE (G. dama ruficollis).

Length on front curve.		Tip to Tip.	Loc	ality.			Owner.
15₹	6	I I ½	Kordofan .				Capt. B. H. S. Romilly.
151	54	84	Do		٠		Col. A. Colville.
154	5 ¹ 8	$15\frac{1}{2}$	Do			٠.	Capt. C. E. Hills.
-151	54	6	Do				H. A. MacMichael.

⁻ Owner's measurements.

Length on front curve.	Circum- ference.	Tip to Tip.		L	ocality	7.	Owner.
-15			Kordofan				A. L. Butler.
-15	58	6.1	Do.				J. C. Phillips.
148	5	$3\frac{7}{8}$	Do.				W. Mure.
143	6	7	Do.		,		Major H. G. F. Stallard.
$14\frac{3}{4}$	$5\frac{3}{4}$	$10\frac{3}{4}$	Do.				G. L. Harrison.
144	$4\frac{3}{4}$	91	Do.				Lord Villiers.
143	51	$6\frac{5}{8}$	Do.				Norman B. Smith.
144	5‡	61	Do.				Walter Jones.
145	54	I I 7/8	Do.				Sir Robert Harvey, Bart.
$14\frac{1}{2}$	$5\frac{1}{2}$	71	Do.				LieutCol. C. J. Hawker.
148	$5\frac{1}{2}$	5 3	Do.				Capt. R. A. McClymont.
148	54	$8\frac{1}{8}$	Do.				Capt. G. M. Lumsden.
148	5	$9\frac{3}{4}$	Dongola				Capt. W. H. Wilkin.
141	5 1 8	71	Kordofan		٠		Capt. A. K. Hargreaves.
14	5	91	Dongola				Capt. the Hon. G. H. Douglas-
14	$5\frac{3}{4}$	$7\frac{1}{2}$	Kordofan				Capt. B. W. Y. Danford.
134	58	$4\frac{3}{4}$	Do.				LieutGen. Sir B. T. Mahon.
134	6	$5\frac{1}{4}$	Do.				G. Chetwynd.
134	$5\frac{1}{2}$	$4\frac{3}{8}$	Do.				Capt. G. S. Cameron.
$13\frac{1}{2}$	5 1/8	$10\frac{4}{3}$	Do.				Capt. F. L. Livingstone-Learmonth.
132	54	$II\frac{1}{4}$	Do.				Earl of Kingston.
123	6	$5\frac{3}{4}$	Do.				Major C. S. Cumberland.
I $2\frac{3}{4}$	54	4	Do.				Hon. Walter Rothschild.
$912\frac{3}{4}$	34	6‡	Do.				LieutGen. Sir B. T. Mahon.
$I2\frac{1}{2}$	5 ³ / ₈	63	Do.				E. N. Buxton.
121	4	55	Sennar				British Museum.

⁻ Owner's measurements.



Horns of Springbuck. From a specimen in the American National Collection.

The SPRINGBUCK (Antidorcas euchore or A. marsupialis).

Springbok, Cape Dutch. Itsaypi, Maklaka. Tsipi, Bechuana.

Menya, Angola.

Although nearly allied to the preceding group of large gazelles, the springbuck presents a peculiarity entitling it to be regarded as the representative of a genus by itself. This peculiarity is the presence of a fold, or narrow pouch, running down the middle of the hinder part of the back, and lined with long pure white hairs. In periods of excitement this pouch is capable of being turned partially inside-out, when the long white hairs are erected, and give a totally different appearance to this region of the animal. With the exception of a chestnut eye-streak, and in one form of a patch of the same colour at the base of the horns, the springbuck has the whole face white; and the white on the rump, which includes the tail and joins that of the middle of the back, also occupies a large area. Height at shoulder, 30 inches. Weight, from 70 to 80 lbs.

Distribution.—The plains of Southern Africa, extending in the central districts of the continent to about latitude 20° S., where its limits are defined by the forests to the south of the Mabebi River; in the west ranging as far north as Mossamedes and Benguela in Southern Angola, and in the east at least up to the Limpopo. Although now

never found in the countless thousands which formerly swarmed over the plains of the Transvaal and Bechuanaland, springbuck are still abundant in many districts. Protected to a certain degree by law, they are to be met with in parts of Cape Colony and the Orange River Colony; while on the plains bordering the Botlitli and the neighbouring salt-pans, as well as in Great Namaqualand, Damaraland, and the Ovampo Flats, they occur in large numbers. Springbuck-stalking on the open veldt affords excellent rifle-practice; zest being added to the sport from the fact that the venison is most excellent for the table.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.	Owner.
119	5	$20\frac{1}{4}$	Kalahari	The late W. F. Webb.
164	6	6	?	J. Rosen.
16	6	7	?	W. A. Simpson Hinchliffe.
153		• • •	?	J. G. Millais.
$15\frac{1}{2}$	$6\frac{1}{2}$	7‡	?	Hon. T. Thynne.
I 5½	61	5	}	Sir Abe Bailey.
$15\frac{1}{2}$	6 1 8	$3\frac{1}{2}$	Cape Colony	C. D. Rudd.
151	6	2 ³ / ₄	S. of Great Namaqualand	Th. Rehbock.
154	$5\frac{1}{2}$	7	Orange River Colony .	Sir H. J. Goold-Adams.
154	$6\frac{1}{2}$	3 3	?	Sir Edmund G. Loder, Bart.
15 1 8	$5\frac{1}{2}$	7	?	Major W. Anstruther Gray.
15 1 8	6‡	5 7 8	Ovampo Flats	The late Capt. F. Cookson.
15	53	7	?	The late George Grey.
15	$5\frac{1}{2}$	81	?	Major E. J. Lugard.
141	$5\frac{3}{4}$	$4\frac{1}{2}$?	C. L. Blundell.
141	61	5	?	C. Ansell.
144	6	$2\frac{3}{4}$?	C. Challis.
14	6	21	Ngamiland	F. T. Garbutt.
14	53	$4\frac{1}{4}$?	British Museum.
14	61	69	3	Sir Owen Philipps.
14	6	3	?	Hon. J. C. Lyttelton.
14	$5\frac{1}{2}$	5	?	F. E. Potter.
14	6	$2\frac{1}{2}$?	N. H. Barton.
135	6	5%	Griqualand	F. C. Selous.

¹ A malformed specimen.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.		Owner.
13 3	6	5≩	?		Earl of Kingston.
135	54	55	Benguela		G. W. Penrice.
135	5½	41	Angola		C. W. Sharp.
I 3½	54	$3\frac{1}{4}$	Orange River Colony		Capt. V. C. de Crespigny.
I 3½	5½	5	Angola		A. H. Harrison.
132	5½	5	Ngamiland		H. A. Bryden.
$13\frac{1}{2}$	5\frac{3}{4}	$4\frac{1}{2}$	Near Kimberley .		G. L. Harrison.
♀ 13½	4	$6\frac{3}{4}$	3		Sir Abe Bailey.
		O	VNER'S MEASUREM	EN	ITS.
191	6	$7\frac{1}{4}$	Near Beaufort West		W. H. Allhusen.
		I $2\frac{1}{2}$?		P. C. Keytel.
17			Middelburg Flats :		American National Collection. (See illustration, page 275.)
16½			Bechuanaland .		Vryburg Club.
16		$6\frac{1}{2}$	Griqualand West .		Capt. G. S. Leslie.
154	5	$2\frac{1}{8}$	German S.W. Africa		H.R.H. Prince George of Bavaria.
I 5½	6		?		Dr. Maloney.



Head of Springbuck.



Head of Gerenuk.

The GERENUK or WALLER'S GAZELLE (Lithocranius walleri).

Gerenuk, Somali. Gudan Godu, Danakil. Gugufto, Galla.

The gerenuk is easily recognised by the great elongation of the neck and the slender legs, which are lengthened in proportion. Horns are wanting in the females, and those of the males curve forwards at the tips, where the ridges stop, in a peculiarly characteristic manner. The general colour of the upper parts is deep rufous fawn, but down the middle of the back runs a broad brown band, nearly eight inches in width. The skull is characterised by its dense and solid structure, as well as by its straightness, the shortness of the facial portion, and the very small size of the cheek-teeth. Height at shoulder, from about 36 to 41 inches; weight, 115 lbs.

This antelope, first described by the late Sir Victor Brooke, is in the habit of raising itself on its hind-legs when browsing, and

is thus enabled to reach boughs at a very considerable distance above

the ground.

Mr. Oscar Neumann pointed out in 1899 that the Somali and Abyssinian gerenuk (*L. walleri sclateri*) is somewhat different from the East African or typical gerenuk. The northern race is larger, with finer horns, a longer neck, a less rufous colour, and brown instead of black knee-tufts, while the white markings of the tail are also different.

Length on front curve.	Circum- ference.	Tip to Tip.	Lo	cality.		Owner.
17	5‡	34	Somaliland			H.R.H. the Duc d'Orléans.
16½	5½	15	Do.			Mr. Justice Hopley.
16	$5\frac{3}{4}$	6	Do.			Sir Edmund G. Loder, Bart.
16	54	$2\frac{3}{4}$	East Africa	٠		W. H. Levy.
15½	$5\frac{1}{2}$	3	Somaliland			J. Kenneth Foster.
$-15\frac{1}{2}$	5 7 8	$4\frac{7}{8}$	Do.		•	American National Collection.
15 ³	58	4	Do.			Col. H. G. C. Swayne.
158	53	41/8	Do.			C. Liddell.
15 ³	58	$4\frac{3}{4}$	Do.			Lord Wolverton.
154	$5\frac{1}{2}$	$4\frac{3}{4}$	Do.			Sir Abe Bailey.
154	5 1/2	$2\frac{3}{4}$	East Africa			R. B. Loder.
151	5 7	$5\frac{4}{3}$	Do.			Capt. F. Blacker.
15½	$5\frac{1}{2}$	$2\frac{1}{2}$	Do.			R. L. Scott.
15	5½	I 7/8	Do.			Capt. R. Clemm.
15	$5\frac{1}{2}$	5 ³ 8	Do.			P. F. Hadow.
15	$5\frac{1}{2}$	$4\frac{1}{2}$	Do.			J. E. R. Oldfield.
15	5 ³	63	Somaliland			F. G. Gunnis.
15	5	43	Do.			LieutCol. J. McCall Maxwell.
15	5^{3}_{4}	$4\frac{1}{2}$	Do.			Capt. H. Maclean.
148	$5\frac{1}{2}$	6	East Africa			P. Fleming.
143	5		Abyssinia			N. C. Cockburn.
$14\frac{3}{4}$	5½	$5\frac{1}{4}$	East Africa			G. de P. Colvile.
$14\frac{3}{4}$	53	5≩	Somaliland			LieutCol. H. G. Mainwaring.
$14\frac{3}{4}$	58	$4\frac{1}{2}$	East Africa			C. C. Wilson.
$14\frac{3}{4}$	54	$2\frac{1}{4}$	Do.			LieutCol. J. H. Patterson.
$14\frac{3}{4}$	5	3	Do.			Col. C. F. Blane.
$14\frac{3}{4}$	6	$4\frac{3}{4}$	Do.			C. Frick.
145	51	5	Do.			C. Bower Ismay.
145	5 3	$3\frac{3}{4}$	Somaliland			A. de L. Long.
$14\frac{1}{2}$	53	$6\frac{1}{2}$	East Africa			H. S. L. Scott.
$14\frac{1}{2}$	$5\frac{1}{2}$	$4\frac{3}{4}$	Do.			Capt. the Hon. G. H. Douglas-
I4 ¹ / ₂	5 ¹ / ₂	2 ³ / ₄	Do.			Pennant. Hon. W. Guinness.
141/2	5	48	Do.			A. F. Williams.

⁻ Owner's measurements.



Head of Sable Antelope.

The SABLE ANTELOPE (Hippotragus niger).

Impengo, Masubia.
Impalampala, Swazi and Zulu.
Ukwa, Makuba.
Potoquani, Southern Bechuana.
Pala-hala, Swahili.
Pala-pala, Makalaka.
Solupi, Masara.

Qualata inchu, Bamangwato and Makololo.

Utjieli, Amandebili.

Kwalata n'tso, Barotsi.

Qualata Tshumu, Ngami.

Mperembi, Chilala and Chibisa.

Mpalari, M'Rua.

Kantanta, Chila.

Among the leading features of the group of antelopes which includes the present species, the roan antelope, the gemsbuck, addax, etc., are the scimitar-shaped, conical, or spiral horns, which are placed just over the eyes and are present in both sexes, the hairy muzzle, the absence of face-glands, and the long, tufted tail. The upper molar teeth have square grinding-surfaces and tall crowns, like those of oxen. Several of the species have face-markings like those of the gazelles, to which the group is probably related. There are four teats.

From the other members of the group the beautiful sable antelope and its near ally the roan antelope are well distinguished by the scimitar-shaped horns, which arise at an obtuse angle with the plane of the face, as well as by the maned neck, the tufts of long white hair below the eyes, and the large ears. By far the handsomer of the two is the present species, whose sable coat and great length of horn render the buck the most striking of its tribe. Other distinctive features are the continuance of the white eye-stripe to the muzzle, the length of the mane, and the relatively moderate size of the ears. The sable antelope when wounded is a dangerous antagonist, to be approached with extreme caution; it runs with considerable speed, and possesses much staying power. Height at shoulder, about $4\frac{1}{2}$ feet. A single horn in the Florence Museum, measured by Mr. F. C. Selous, is 61 inches on the front curve; and other specimens approximating to, or even exceeding this length are in existence.

Distribution.—From about the centre of the Transvaal northwards to Nyasaland and the adjacent districts of South-East and East Africa, and westwards to Angola. Still abundant in parts of Eastern Mashonaland, and thence towards the coast, as well as on the Batoka plateau to the north of the Zambesi. Scarcer in Central East Africa and Mozambique.

A.—TYPICAL RACE.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.			Owner.		
60	105	175	Angola			J. C. Phillips.		
$58\frac{1}{4}$	9_{8}^{5}	134	Do			J. W. Walker.		
56	IO1	138	Do			Sir Edmund G. Loder, Bart.		
55	9 5	148	Do			Sir Abe Bailey.		
53 5	94	$23\frac{1}{2}$	Do			American National Collection.		
52\frac{1}{8}	10	$23\frac{1}{2}$	Do			Major Boyd A. Cuninghame.		
51	$10\frac{1}{2}$	II	N.W. Rhodesia.			Capt. A. P. Heneage.		
50g	$9\frac{1}{2}$	181	Do			Hon. Walter Rothschild.		
50 3	$9\frac{1}{2}$	24_{8}^{3}	N.E. Rhodesia.			R. D. Waterhouse.		
50 3	10	$19\frac{1}{2}$	N.W. Rhodesia.			G. F. Williams.		
50½	9^{1}_{4}	$23\frac{3}{4}$	Do.			Capt. C. G. Leslie.		
50	$10\frac{1}{8}$	$7\frac{1}{4}$	Do			Norman B. Smith.		
50	$10\frac{7}{8}$	$IC_{\frac{1}{4}}$	Do			Earl of Kingston.		
49\\\\	10	I25	Do			Capt. W. F. Reichwald.		
495	108	I 2	Do			T. P. Kempson.		
49	IO	17%	S. Rhodesia .			A. T. Reid.		
48\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	9‡	$10\frac{1}{2}$	N.W. Rhodesia			LieutCol. R. W. R. Barnes.		
483	10	234	Do.			J. H. Hayes.		
$48\frac{3}{4}$	95	171	Do			Capt. R. A. McClymont.		
483	$9\frac{1}{2}$	$12\frac{1}{2}$	Do		,	J. H. Leche.		
$48\frac{1}{2}$	$9\frac{1}{4}$	$22\frac{3}{4}$	Do			E. Caldwell.		
481	101	9	N.E. Rhodesia .			W. A. Conduitt.		

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.	Owner.
48‡	10	20	N.W. Rhodesia	. Major P. A. Cox.
48	9	14≟	Do	. C. Phillips.
48	101	15∄	Matabililand	. Major J. P. Grenfell.
473	103	21	Do	. J. Bell.
47 ³ / ₄	IO	$23\frac{1}{2}$	Do.	. R. T. Coryndon.
47 ³ / ₄	9章	I 3½	Do	. J. L. Philips.
47 5	10	13	Do	. Guy Nickalls.
47\$	$9\frac{3}{4}$	II	Do	. Major E. de L. Hayes.
$47\frac{1}{2}$	10	9	Do	S. R. Price.
$47\frac{1}{4}$	9\$	$23\frac{1}{2}$	Do	. Col. C. Harding.
46 3	10	$2I\frac{1}{2}$	British Central Africa	. J. B. Davey.
463	$9\frac{1}{4}$	13	N.E. Rhodesia	. H. Cookson.
46‡	$9\frac{1}{4}$	192	N.W. Rhodesia	. Dr. E. H. Tripp.
$46\frac{1}{2}$	$9\frac{3}{4}$	$12\frac{1}{4}$	Do	. F. Barker
46½	10	15	Ngamiland	. F. T. Garbutt.
461	9½	18	N.E. Rhodesia	. E. M. Crosfield.
461	$9\frac{1}{2}$	14	N.W. Rhodesia	. Hon. Sir Arthur Lawley.
461	IO	I I 1.1	Do	. G. L. Harrison.
46 1	IO1	19½	N.E. Rhodesia	. Col. C. F. Blane.
461	$9\frac{1}{4}$	211	N.W. Rhodesia	. J. M. Kearney.
46 1	91	51	S. Rhodesia	. Val Gielgud.
46	10	II $\frac{1}{4}$	N.W. Rhodesia	. T. G. Davey.
46	9 §	105	Do	. Capt. the Hon. G. H. Douglas-
46	104	21	Do	. H. M. P. Hewett.
46	101	$15\frac{1}{2}$	Do	. T. Clemens Usher.
46	93	$16\frac{1}{2}$	British Central Africa	. Capt. R. S. Chichester.
45 ³ / ₄	103	$I2\frac{1}{2}$	Do.	. Sir Edmund G. Loder, Bart.
45\\\\	103	$16\frac{1}{2}$	Rhodesia	. A. Yale Massey.
$45\frac{3}{4}$	$9\frac{3}{4}$	$\mathbf{I} \mathbf{I} \frac{1}{2}$	Do	C. W. Adams.
$45\frac{1}{2}$	9‡	I 5½	Mashonaland	. Major G. A. L. Carew.
45½	$10\frac{1}{2}$		N.W. Rhodesia	. H. B. Marshall.
45 1	$10\frac{1}{2}$	134	Do	. A. C. Brandon.
45½	10	13	Do	. Dr. Cole.
$45\frac{1}{2}$	$9\frac{1}{2}$	154	Do	. B. Ryan.
♀ 39⅓	6 1	65	Mashonaland	. F. C. Selous.
			OWNER'S MEASURE	MENTS.
623	110	221	Angola	F I Boake

623	118	231	Angola .		E. J. Boake.
541			Do		Essington Brown.
518			?		W. Colson.
491			5		C. S. Mann.
48		154	Transvaal.		LieutCol. R. B. Fell.

70	77 A CIPR	A 37370 TO AL	4 37 73 4	OT OT		11.5
B	LAST	AFRICA	AN KA	CE (H.	niger	roosevelti).

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.		Owner.
40	9 3	20	British East Africa		Capt. C. J. Murray.
37 2	8		Do.		R. B. Loder.
37	9	II $\frac{1}{2}$	Do.		C. Bower Ismay.
35 .	81	$6\frac{1}{2}$	Do.		British Museum (G. J. Muir).
$34\frac{1}{2}$	83	$13\frac{1}{2}$	Do.		N. C. Cockburn.
$34\frac{1}{4}$	$9\frac{1}{4}$	15‡	Do.		Capt. W. H. Wilkin.
34	$9\frac{1}{2}$	6 <u>3</u>	Do.		The late G. G. Longden.
33 ³ / ₄	9	15	Do.		Capt. M. Kincaid Smith.

The East African race was described, as a distinct species, in 1910 by Mr. Heller on the evidence of a female killed in the Shimba Hills, British East Africa, and said to be paler in colour than the typical race.



Skull and Horns of Sable Antelope, Quanza River District, Angola. Length, 60 inches. In the collection of Mr. J. C. Phillips.





(1) Head of Roan Antelope, and (2) Skull and Horns of the record specimen shot by Major the Hon. C. B. O. Mitford.

The ROAN ANTELOPE (Hippotragus equinus).

Amōn, Sudani.
Abu uruf, Dinka and Arabic.
I-taka, Amandebili.
I-pala-pala chena, Makalaka.
Gwenki, Hausa.
Impengo eetuba, Masubia.
Kwar, Masara.
Klabakila, Basuto.
Ipewa, Chilala and Chibisa.

Mtagaisi, Swazi and Zulu.

U-ka-muh-wi, Makuba.

Qualata, Northern Bechuana.

Kwalata and Etselta, Ngami.

Qualata Tseu, Barotsi.

Tai-hait-sa, Southern Bechuana.

Wunderbi, Abyssinian.

Abú aruf, Sudani.

Chilumbulumbu, Chila.

Its much larger size (height at shoulder, about 4 feet 9 inches), the shorter horns and mane, the larger ears and eye-tufts, and, above all, the grizzled roan or rufous coat, render the present species easily distinguishable from its sable cousin. A marked character of the face of the roan antelope is the cutting-off of the white eye-stripe from the muzzle by a transverse dark bar connecting the dark nose-streak with the brown of the cheeks; while the dark nose-streak itself likewise stops short of the muzzle, which is thus wholly white. Weight, about 625 lbs.

Distribution.—From north of the Vaal and Orange Rivers through East and East Central Africa to the Sudan and Abyssinia, and westward

to Angola, Nigeria, and Senegambia. The name *H. equinus langheldi* has been applied to the East African race, one Sudani race is known as *H. e. bakeri*, the West African as *H. e. gambianus*, and others have been named. Gordon Cumming shot roan antelope just north of the Orange River in Griqualand West, where the species has long been exterminated. Nowhere abundant, it is now most plentiful in Mashonaland and neighbouring districts; in the Transvaal it is only sparsely distributed. South of the Orange River this group of antelopes was formerly represented by the much smaller blaauwbok or blue antelope (*H. leucophæus*), exterminated about the commencement of last century.

A.—TYPICAL RACE (H. equinus typicus).

			,	_	· · · · · · · · · · · · · · · · · · ·
Length on front curve.	Circum- ference.	Tip to Tip.	Locality.		Owner.
401	$9\frac{1}{2}$	7 ³	Rhodesia .		Major the Hon. C. B. O. Mitford.
$34\frac{1}{2}$	9	91	S. Rhodesia .		A. T. Reid.
344	9	7	Okavango Valley		Sir H. J. Goold-Adams.
$32\frac{3}{4}$	85	$9\frac{1}{2}$	Rhodesia		Sir Abe Bailey.
$32\frac{3}{4}$	9‡	$11\frac{1}{2}$	Do.		R. E. Gunther.
$32\frac{1}{2}$	9	91	Do		W. A. Simpson Hinchliffe.
32	91/2	12	Hanyani Valley .		F. C. Selous.
314	$9\frac{1}{2}$	$5\frac{1}{2}$	South Africa .		Sir Edmund G. Loder, Bart.
31 ½	$9\frac{1}{2}$	I I $_{8}^{7}$	Mashonaland .		F. C. Selous.
3112	104	$8\frac{3}{4}$	Angola		Surgeon C. G. Sprague, R.N.
$31\frac{1}{2}$	9	101	N.W. Rhodesia .		Col. Lord Douglas Compton.
$931\frac{1}{2}$	7	$13\frac{1}{2}$	Do		Capt. E. C. Hamilton.
314	$9\frac{3}{4}$	$14\frac{1}{4}$	N.E. Rhodesia .		G. Sandeman.
311	9	13	N.W. Rhodesia .		J. Bell.
31	83	13	Mashonaland .		J. A. Jameson.
♀ 30½	7	7 ⁸	Do		F. C. Selous.
$30\frac{1}{2}$	9	131	South Africa .		G. Richards.
$30\frac{1}{2}$	9	I 3½	Angola		Major Boyd A. Cuninghame.
$30\frac{1}{2}$	10	$5\frac{3}{4}$	Matabililand .		Capt. Lord H. Seymour.
308	91	13	British C. Africa		Dr. J. E. S. Old.
30	$9\frac{3}{4}$	5	Rhodesia		Capt. G. M. Spencer-Smith.
30	$9\frac{1}{2}$	$6\frac{3}{4}$	British C. Africa		Capt. G. M. P. Hawthorn.
30	10	$11\frac{1}{2}$	N.W. Rhodesia.		Capt. L. C. Brodie.
30	S ₈ 7	131	?		Sir Owen Philipps.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.		Owner.
29 7	108	14§	Matabililand		W. Van Ness.
2 9§	98	I I 1/4	Mashonaland		Hon. Walter Rothschild.
29 ³ / ₄	9 7 5	10	Do.		Sir John Willoughby, Bart
294	91	6	N.W. Rhodesia		Duke of Westminster.
$29\frac{5}{8}$	87	9	Do.		Capt. W. F. Reichwald.
♀ 29½	7	$6\frac{1}{4}$	British C. Africa		R. H. Storey.
		OW	NER'S MEASU	REME	NTS.
394			Tokwi Valley, S Rhodesia	outh	South African Museum (R. C. Camp).
35	$9\frac{1}{2}$	$8\frac{1}{2}$	(2 .1 4.6.1		1 011
$31\frac{1}{2}$	$10\frac{1}{2}$	I I 1 4	Angola .		E. P. Cooper.
$30\frac{1}{2}$	9 ³ / ₈	9	3		A. F. Williams.

B.—SUDANI RACE (H. equinus bakeri).

				,	_	,
Length on front curve.	Circum- ference.	Tip to Tip.		Locality.		Owner.
374	10	71	Sudan			P. Niedieck.
$34\frac{1}{2}$	01	9	Do.			LieutGen, Sir B. T. Mahon.
34	$9\frac{3}{4}$	31	Do_{\bullet}			The late Major J. L. J. Conry.
34	$9\frac{1}{4}$	58	Do.			Major G. de H. Smith.
$33\frac{1}{4}$	10	I 7½	Do.			Marquis Pizzardi.
33	83	10	Do.			S. H. Whitbread.
33	$9\frac{1}{2}$	$6\frac{5}{8}$	Do.			Capt. A. K. Hargreaves.
32_4^3	9	$14\frac{3}{4}$	Do.			Sir Savile Crossley, Bart.
$32\frac{1}{2}$	9	121	Do.			Capt. E. Berry.
321/2	91	138	Do.			Capt. C. R. G. Mayne.
$32\frac{1}{2}$	$9^{\frac{3}{4}}$	15	Do.			Capt. G. Stewart.
321/2	9		Do.			R. McD. Hawker.
321	10	83	Do.			G. H. Cheetham.
324	91	ΙΙ	Do.			Lord Villiers.
-32 ¹ / ₄	$9\frac{7}{8}$	138	Do.			British Museum (Sir W. Garstin).
32	95	$5\frac{3}{4}$	Do.			C. Adeane.
32	$9\frac{1}{4}$	13	Do.			E. D. H. Tollemache.
32	9 1	134	Do.			Norman B. Smith.
314	$9\frac{3}{4}$	I 1 5/8	Do.			Hon. T. G. B. Morgan-Grenville.

⁻ Owner's measurements.

C.—WESTERN RACE (H. equinus gambianus).

(Including H. e. scharicus, of the Lower Shari Valley.)

Length on front curve.	Circum- ference.	Tip to Tip.	L	ocality	7.	Owner.
33	$9\frac{1}{2}$	$17\frac{1}{2}$	N. Nigeri	a		G. C. W. King.
$32\frac{1}{4}$	9	$12\frac{1}{2}$	Do.			W. A. Judd.
$30\frac{1}{2}$	9	103	Nigeria			LieutGen. Sir James Willcocks.
$29\frac{1}{2}$	9	98	Do.			Capt. E. J. Wolseley.
29	$9\frac{1}{4}$	$13\frac{1}{2}$	Do.			A. F. Hordern.
$-28\frac{3}{4}$	85	$\mathbf{I}2\frac{1}{2}$	Gambia			Dr. Percy Rendall (Charterhouse School Museum).
♀ 28¾	$6\frac{7}{8}$	$2\frac{3}{4}$	Nigeria			The late Capt. G. H. F. Abadie.
28 3	$9\frac{1}{2}$	$8\frac{3}{4}$	Gold Coa	st		Capt. G. H. Hastings.
281	$9\frac{1}{2}$	13	Nigeria	٠		Dr. G. J. Pirie.
28	81	$10\frac{3}{4}$	Do.			Capt. H. N. Kempthorne.
28	81	$10\frac{3}{4}$	Do.			W. Dales.
$27\frac{3}{4}$	$9\frac{1}{2}$	II 1 1	Do.			Capt. G. C. Kelly.
$27\frac{3}{4}$	9	$10\frac{1}{4}$	Do.			Dr. E. Charteris.
27 $\frac{3}{4}$	$9\frac{1}{2}$	9	Do.			S. F. Birch.

D.—EASTERN RACES (H. e. langheldi).

Length on front curve.	Circum- ference.	Tip to Tip.	Locali	y.		Owner.
$29\frac{3}{4}$	9	$9\frac{5}{8}$	East Africa			K. V. Painter.
$29\frac{1}{2}$	9	$5\frac{1}{2}$	Do.			Gerard Buxton.
29 ³ / ₈	934	9	Do.			Stephenson R. Clarke.
29	$9\frac{1}{2}$	$7\frac{1}{2}$	Do.			M. Bell.
$28\frac{5}{8}$	87	83	Do.			Walter Jones.
$27\frac{1}{2}$	$9\frac{1}{2}$	71	Do.			Percy C. Madeira.
271	$9\frac{1}{2}$	8	Do.			W. L. Spencer Churchill.
27	$9\frac{1}{2}$	$4\frac{1}{4}$	Do.			A. Vonwiller.
26 1	9	6}	Do.			Capt. G. F. Phillips.
26 1	81	3	Do.		٠.	LieutCol. F. Wormald.
26	$8\frac{3}{4}$	71	Do.			Sir Kenneth Crossley.
26	$8\frac{1}{2}$	$7\frac{3}{4}$	Do.			Capt. Mackenzie Murray.
25 ³ / ₄	9	5	Do.			W. A. Baird.
$25\frac{3}{4}$	81/4	$10\frac{3}{4}$	Do.			H. B. Cox.
$25\frac{1}{2}$	9	$6\frac{1}{2}$	Do.			N. Flower.
$25\frac{1}{2}$	$9\frac{1}{2}$	10	Do.			J. G. Millais.
$25\frac{1}{2}$	83	9	Do.			W. H. Lindsay.
$25\frac{1}{2}$	8	91	Do.			Capt. R. A. McClymont.
25 €	$9\frac{1}{2}$	12	Do.			E. M. Crosfield.
251	$8\frac{3}{4}$	10	Do.			Capt. H. C. S. Ashton.
♀ 25	6	2	Do.			C. Bower Ismay.

⁻ Owner's measurements.



Skull and Horns of Gemsbuck. From Mr. F. H. Barber's specimen in American National Collection.

The GEMSBUCK (Oryx gazella).

Kukama, Bechuana. Ko, Burman. Gemsbok, Cape Dutch.

The long, straight, spear-like horns, of which even the lion fights shy, render the gemsbuck and its more immediate allies an easily recognised sub-group. And even when, as in the white oryx, the horns are scimitar-shaped, they differ from those of the sable antelope by starting in the plane of the face. It is also a noteworthy fact that in the present species the horns of the females are longer and finer, and therefore more prized, than those of the bulls. An adult gemsbuck stands about 4 feet at the shoulder. In addition to the length of its horns, the species is sufficiently characterised by the presence of a tuft of dark hair on the throat, and the cutting-off of the white eye-stripe from the muzzle by the union of the dark central nose-streak with the black of the cheeks.

Distribution.—The desert regions of South-Western Africa, from the northern Karus of Cape Colony through the Kalahari and Damaraland to Southern Angola, in Mossamedes, and perhaps Benguela. North of the Chobi and eastwards of Khama's country the species appears to be unknown. About 1846 Gordon Cumming found gemsbuck abundant on the northern Karus of Cape Colony; and even now a few linger on the plains to the south of the lower reaches of the Orange River. In the northern Kalahari, where they exist for months without water, they are still abundant. The splendid horns of the gemsbuck are always regarded as prime trophies of the hunter's skill; the finding, riding-down, and shooting of one of these wary and enduring desert-bred antelopes being a feat of which any man, however well mounted, may be deservedly proud.

Length on front.	Circum- ference.	Tip to Tip.	Locality.				Owner.		
48	81	$23\frac{3}{4}$	Bechuanaland				Sir Abe Bailey.		
$47\frac{1}{2}$	63	$17\frac{1}{2}$	South Africa				The late J. S. Jameson.		
$46\frac{3}{4}$	7	$22\frac{1}{2}$	Do.				Sir Owen Philipps.		
46	7	$25\frac{1}{2}$	Do.				W. A. Simpson Hinchliffe.		
45 ⁵	$6\frac{1}{2}$	198	?				Sir Edmund G. Loder, Bart.		
9 45‡	61	$33\frac{3}{4}$	Ngamiland				Sir H. J. Goold-Adams.		
451	6^{3}_{4}	20 3	Do.				G. M. Bond.		
45	81/8	$18\frac{1}{2}$	Do.				Hon. Walter Rothschild.		
45	7	26	Do.				R. H. Venables Kyrke.		
44	71	20	S.W. Africa				C. G. Carew Elers.		
438	$6\frac{3}{8}$	182	Nata Valley				F. C. Selous.		
431	6 5	$20\frac{7}{8}$	3				Sir Victor Brooke's Collection.		
431	61	182	5				British Museum.		
43½	$6\frac{3}{4}$	16	Kalahari .				A. F. Williams.		
43 1 8	61/4	16 <u>1</u>	?				M. Drew.		
43	6½	22	?				W. Y. Campbell.		
42½	7	20%	Bechuanaland			٠	A. Neilson.		

RECORDS OF BIG GAME

Length on front.	Circum- ference.	Tip to Tip.	Locality.			Owner.
42 <u>3</u>	61	$19\frac{1}{2}$	Bechuanaland			Capt. F. H. Lehmann.
42 ¹ / ₄	$6\frac{1}{2}$	243	Do.			Col. St. C. Pemberton.
42	$S^{\frac{1}{2}}$	$24\frac{1}{2}$	Do.			Capt. the Hon. G. H. Douglas-
42	61	$20\frac{3}{4}$	3			A. Ryley.
$4I\frac{1}{2}$	7	211	?			Dr. S. Martin.
$4I\frac{1}{2}$	$7\frac{1}{2}$	18 $\frac{1}{2}$?			R. T. Coryndon.
41	II 1 2	23 2	Bechuanaland.			G. L. Harrison.
			OWNER'S MEA	ASUI	REM	IENTS.
9 46 <u>1</u>			Bechuanaland .			C. S. Mann.
♀ 45½			Do		,	American National Collection. (See illustration.)
451		23§	Ngamiland .			H.R.H. the Duc de Montpensier.
44½	61	25	5			P. C. Keytel.
44	$6\frac{1}{2}$	17	?			A. Ohlsson.
431	8	16	?			Col. J. J. Harrison.

42½ 7 23 Kalahari . . . H. A. Bryden.

BEISA 291



Head of Beisa.

The BEISA (Oryx beisa).

Biid, Somali. Sala, Danakil.

The beisa may be regarded as the north-eastern representative of the gemsbuck, from which it is distinguished at a glance not only by the absence of a fringe of hair on the throat, but also by the separation of the black nose-stripe from the eye-stripes. There is also no black on the haunches or thighs, and the horns are considerably shorter and less divergent. Height at shoulder reaching 4 feet or rather more. Weight, about 450 lbs.

Distribution.—North-east Africa, from Suakin through Abyssinia to Berbera in Somaliland, and south to the Tana River. The Galla beisa, on account of its darker colouring, is separated as O. b. gallarum; the Kilimanjaro race, O. b. callotis, is characterised by its tufted ears; and intermediate between this and the typical race is O. b. annectans of the Laikipia plateau.

A.—TYPICAL RACE (O. beisa typica).

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.			Owner.			
♀ 39	5 ½	S	Hargeisa, Somalila	and		E. P. Hare.			
384	5½	II 1 2	East Africa			Capt. W. H. Wilkin.			
38	7	10	Do			Capt. F. H. Span.			
38	5	13	Abyssinia			N. C. Cockburn.			
373	63	S	East Africa			Capt. W. M. Burrell.			
375	5€	$9\frac{3}{4}$	Do			C. Fahnestock.			
1 37 5	$II\frac{1}{8}$	1.4	Do			P. Fleming.			
♀ 37‡	6	10	Do. '			W. N. McMillan.			
374	7	II.	Somaliland			G. D. E. Chapman.			
363	71	121	Do			A. E. Butter.			
361	6	10	East Africa			Rhys Williams.			
36≩	61	. 78	Somaliland			G. J. A. Troyte.			
36 ‡	6½	81	Gallaland			M. V. Hay.			
361	63	$9^{\frac{1}{4}}$	East Africa			Col. J. Caswell.			
36	61	10^{1}_{2}	Somaliland			Capt. J. T. Brinkley.			
36	6	8	Do			Count J. Potocki.			
36	$7\frac{1}{2}$	8	East Africa			The late G. G. Longden.			
36	63	10	Do			J. L. Baird.			
35₹	54	$9_{ m s}^7$	Do			G. F. Archer.			
354	63	$9\frac{1}{8}$	Somaliland			Lord Delamere.			
♀ 35월	$6\frac{1}{2}$	$9\frac{1}{2}$	East Africa .			British Museum.			
♀ 35¾	5≩	$9\frac{1}{2}$	Do			Capt. G. H. Riddell.			
354	51	84	Somaliland			Sir Edmund G. Loder, Bart.			
35\$	7	10	East Africa			J. E. R. Oldfield.			
♀ 35½	6	II	Do			W. F. Whitehouse.			
\$ 35½	51	7	Do			MajGen. Sir A. N. Rochfort.			
$35\frac{1}{2}$	6	$9\frac{1}{4}$	Do			C. S. Collier.			
$35\frac{1}{2}$	$6\frac{1}{2}$	83	Somaliland			Prince Nicolas Ghika.			
\$ 35 1	6	$10\frac{1}{2}$	East Africa.			Capt. Lord Gerard.			
354	$6\frac{1}{2}$	$9\frac{1}{2}$	Do			G. Fenwick-Owen.			
35‡	$6\frac{1}{2}$	$IO_{\frac{1}{4}}$	Do			E. V. Hemmant.			
35	6	71	Do			W. N. McMillan.			
35	6	9	Somaliland.			Gen. Sir Arthur Paget.			
35	53	94	S. Abyssinia .			T. Morse.			
35	54	$6\frac{1}{2}$	Do.			Capt. F. L. Livingstone-Learmonth.			
35	54	7 ⁵	Somaliland.			A. S. Trevor.			
♀ 35	$5\frac{1}{2}$	91	East Africa .			Col. C. F. Blane.			
35	$6\frac{2}{4}$	7	Do			Capt. G. V. Clarke.			
		O	WNER'S MEASUI	RE	ΊE	ENTS.			
\$ 38 de	6	9	Somaliland.			Major E. Bell.			
37 k	7	$7\frac{1}{2}$	Do			J. C. Phillips.			
37.11			1 Abnormal Gir	rth.					



Head of Fringe-eared Beisa.

B.—KILIMANJARO or FRINGE-EARED RACE (O. beisa callotis).

Distinguished from the typical beisa by the fringe of long hairs surmounting the ears, by the extension of the eye-stripe to the lower jaw, along which it generally runs to join the throat-stripe, by the absence of any black on the front of the legs below the knees, and by the rich fawn of the ground-colour of the upper part of the face. Height at shoulder, 48 inches.

Length on front.	Circum- ference.	Tip to Tip.	Localit	у.		Owner.
$33\frac{1}{2}$	7	13	Makindu .			R. B. P. Cator.
$33\frac{1}{4}$	7‡	112	Near Lake Na	alaron		Capt. Mackenzie Murray.
33	7	$9\frac{1}{2}$	Kilimanjaro			The late G. G. Longden.
$32\frac{3}{4}$	65	117	East Africa			A. Fowler.
32 ³ / ₄	7 ½	. 12	Do.			A. Murray Smith.
$32\frac{1}{2}$	7	113	Do.			G. N. Crisford.
321	7.4	13	Do.			Lieut. S. R. Bailey, R.N.
313	$6\frac{1}{2}$	84	Do.			H. Fowler.
$31\frac{1}{2}$	7 \$	9;;	Do.			W. H. Levy.
31	6	IO	Do.			W. M. Greiss.
31	71	10	Do.		٠,٠	A. W. Mayo Robson.
9 31	54	$\mathbf{I} 2 \frac{1}{2}$	Do.			J. Leslie.
305	$6\frac{1}{2}$	$9\frac{1}{2}$	Do.			G. de P. Colvile.
301	5 3 4	IO2	Do.			Sir F. J. Jackson.

Length on front.	Circum- ference.	Tip to Tip.	Locality.		Owner.
301	•••	6	Sabaki District	٠	Capt. T. W. Greenfield.
$29\frac{1}{2}$	6	$12\frac{3}{4}$	East Africa		Sutton Timmis.
29½	6 7 8	10	Do		H. G. Watson.
29½	5 5	7 ³	Do.		Sir Robert Harvey, Bart.
29 3	$7\frac{1}{2}$	$9\frac{1}{2}$	Do		Capt. R. H. R. Brocklebank.
291	61	$11\frac{1}{2}$	Do		Count B. Tyszkiewicz.
29‡	$6\frac{7}{8}$	$10\frac{1}{2}$	Do		Sir J. Hume Campbell, Bart.
29 ¹ / ₄	63	121	Do		F. C. Stern.
29	7	$10\frac{3}{4}$	Do		David Davies.
29	$7\frac{1}{2}$	$10\frac{1}{4}$	Do		Count A. Tyszkiewicz.
29	6	II	Do		E. H. Litchfield.
29	5‡	II ½	Do		Sir Edmund G. Loder, Bart.
29	65	133	Do		Lord Wodehouse.
29	543	11	Do		H. Sampson.
28 <u>3</u>	5 5	6	Do		H. C. V. Hunter.
♀ 28 5	44	I 2 1/4	Do		Henry Charrington.
28½	7	$10\frac{1}{2}$	Do		A. Hamilton Gault.

OWNER'S MEASUREMENTS.

♀ 33₺	53	$14\frac{1}{2}$	Kilimanjaro	٠	Major F. A. Dickinson.
321	6	121	Do.	٠	Do.



Head of Arabian Oryx. Shot by Mr. D. Carruthers.

The ARABIAN ORYX (Oryx leucoryx).

This oryx is a smaller animal than the beisa, measuring about 2 feet 8 inches at the shoulder, and is of a whitish colour, with a dark spot on the face, and a large dark patch on each cheek, which meets its fellow beneath the throat; the knees and the front of the lower portion of the legs being blackish brown, and the tail-tuft black. The horns are slightly curved.

Distribution.—The interior of Arabia, especially the Nejd district and the confines of the great desert east of Oman.

Length on front.	Circum- ference.	Tip to Tip.		Locali	ty.		Ow	ner.
234	5	91/4	Arabia				Sir Edmund G.	Loder, Bart.
22	4	10	Do.		٠,		British Museum	n (P. B. Vander Byl).
♀15	38	$4\frac{1}{2}$	Head of	Persia	ın Gu	lf.	Do.	(B. T. Ffinch).
		OW	NER'S 1	MEAS	URE	ME	NTS.	

271	41	$12\frac{1}{2}$	Tebuk		D. Carruthers.
2613	43	101	Arabia		Paris Museum.



Head of White Oryx.

The WHITE ORYX (Oryx algazel).

Abū harb, Sudani.

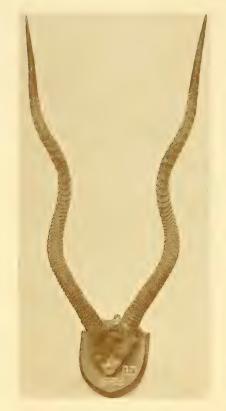
A very distinct species of the genus, agreeing approximately in size with the beisa, but with long recurving scimitar-shaped horns and a generally whitish colouring, showing a more or less distinct chestnut tinge. The chestnut is developed on the neck, shoulders, under-parts, upper portions of the limbs, and the face; the last corresponding very closely with the dark markings of the beisa in their arrangement.

Distribution.—North-western Central Africa, from Nigeria to Sennar, Kordofan, and parts of Nubia and the Eastern Sudan generally.

Length on front.	Circum- ference.	Tip to Tip.	Loca	ality.		Owner.	
45	61	81	Kordofan				G. Blaine.
44 ¹ ₂	63	9	Do.				Major H. G. F. Stallard.
438	$6\frac{1}{2}$	$10\frac{1}{2}$	Do.				Major H. H. S. Morant.
9 43‡	47	12%	Do.				Norman B. Smith.
9 43	51		Gold Coast				P. J. Partridge.

Length on front.	Circum- ference.	Tip to Tip.	Locali	ty.			Owner.
42 ³ / ₄	61	9	Kordofan				Hon. Walter Rothschild.
421	5 ¹ / ₈	IO 1/2	?				Sir Owen Philipps.
42	7 l s		Northern Terr Coast	itorie	s, Go	1d	Capt. H. Read.
142	5		Nigeria .				Capt. W. D. Wright.
$^141\frac{7}{8}$	6 1		Lake Chad .				E. B. Macnaughten.
413	5	161	Kordofan				Walter Jones.
41 ²	6≟	83	Dongola .				Capt. W. H. Wilkin.
41 5	6	101	Kordofan				E. N. Buxton.
418	$6\frac{1}{2}$	9	Do.				Capt. A. K. Hargreaves.
411	6₿	• • •	N. Nigeria				Capt. S. C. Taylor.
40 ¹ / ₂	5₹	61	Kordofan				Capt. J. C. Graham.
$40\frac{1}{2}$	$6\frac{5}{8}$	81	Do.				Sir Robert Harvey, Bart.
9 40 <u>1</u>	5 1	I 5½	Do.				Do.
394	$5\frac{1}{2}$	141	Do.				The late Prince Henry of Liechten-
$39\frac{3}{4}$	6‡	$4\frac{1}{2}$	Do.				stein. British Museum (Major H. N. Dunn).
♀ 391	5‡	6:	Do.				Capt. G. S. Cameron.
391	.6½	32	Do.				C. E. Lyall.
39‡	5 5	11;	Do.				LieutGen. Sir B. T. Mahon.
¹ 39	51		N. of Sokoto				Major-Gen. P. S. Wilkinson.
39	$5\frac{1}{2}$	101	Dongola				Capt. the Hon. G. H. Douglas- Pennant.
			OWNER'S N	AEAS	SURI	ΞM	ENTS.
43		15	Kordofan			. •	Major A. J. B. Percival.

1 Single horn.



Horns of Addax. In the collection of Sir Edmund G. Loder, Bart.

The ADDAX (Addax nasomaculatus).

Kūbbăji, Arabic.

This antelope is another member of the oryx group, but is referred to a genus apart, of which it is the sole representative. Its most distinctive features are the spirally twisted and closely ringed horns (which recall those of the lesser kudu). The general colour in summer is sandy above and whitish below, with a brown patch on the forehead. In winter, at any rate in the case of the typical Tunisian race, the coat is grey and a heavy mass of long brown hair developed on the neck, shoulders, and forehead, although a streak across the face below the eyes, the lips, and a spot on the outer surface of each ear are white. Hoofs very wide and shallow, almost like those of the reindeer. Height at shoulder, about 3 feet 6 inches.

Distribution.—North Africa, as far south as lat. 7° 15' N. in the Egyptian Sudan.

Len	gth.	Circum-	Tip to			
On front curve.	Straight line.	ference.	Tip.	Locality.		Owner.
3915	$34\frac{1}{2}$	$5\frac{7}{8}$	$18\frac{3}{4}$	3		Sir Edmund G. Loder, Bart. (See illustration.)
♀ 39₺	325	$4\frac{3}{4}$	24	Sudan		H. Hodgson.
39	31	6 5	$20\frac{7}{8}$	Dongola		Capt. the Hon. G. H. Douglas- Pennant.
39	33	6	$20\frac{1}{2}$?		Carl Hagenbeck.
382	$30\frac{1}{2}$	$6\frac{1}{2}$	${\bf I}{\bf 2}{\textstyle\frac{1}{2}}$	South Tunisia .	٠	British Museum (J. I. S. Whitaker).
373	31 ³ / ₄	5∄	$23\frac{1}{2}$	Sahara		W. Barry.
37 1	31	61	$28\frac{1}{2}$	Sudan		H. Hodgson.
36 §	291	$6\frac{1}{2}$	13	Sugari	•	11, 11005000
36½	3112	6	194	South Tunisia .	٠	American National Collection.
36	301	$6\frac{1}{4}$	188	Dongola		G. Blaine.
36	28 3	$6\frac{3}{4}$	I 2	S.W. Dongola .		Major A. J. B. Percival.
354	28	6 3	135	North Africa .		Hon. Walter Rothschild.
9 34¾	28	4 ³ / ₄	$7\frac{1}{2}$	Do		Do.
. 344	29	61	$20\frac{1}{2}$	W. of Dongola	٠	Earl of Kingston.
34	$29\frac{1}{2}$	$5\frac{3}{4}$	14 3	Do.		Mr. Justice Hopley.
34	29	$6\frac{3}{8}$	IO1	Do.		Sir Abe Bailey.
$33\frac{1}{2}$	26	$5\frac{1}{2}$	$12\frac{1}{4}$	Do.		Hon. R. A. Ward.
324	$27\frac{1}{4}$	61	14	Do.		Sir Robert Harvey, Bart.
32 5	27 1	63/4	18	S.W. of Dongola		Capt. P. E. Vaughan.
321	27 ½	$6\frac{1}{2}$	17	Algeria		A. F. Williams.
31½	26	54	$12\frac{1}{4}$	Do	٠	Major R. Rankin.
			OWNI	ER'S MEASUREM	IEN	ITS.
$35\frac{1}{2}$	301	6 <u>1</u>	20	3		J. C. Phillips.



Skull and Horns of Four-horned Antelope.

FOUR-HORNED ANTELOPE or CHOUSINGHA (Tetraceros quadricornis).

This antelope, which was formerly classed with the African duikers, is now regarded as a relative of the nilgai. Typically there are two pairs of horns, and the face-glands form deep slits; the females being hornless. The upper molar teeth have low, squared crowns. Height at shoulder, about 25 inches, and weight, about 40 lbs. General colour dull rufous brown, becoming whitish beneath, with the muzzle, the outer surface of the ears, and a line down the front of each leg blackish brown, and some white on the outer side of the pasterns. The front horns are not infrequently mere knobs, and may even be wanting, as in most Madras and Kathiawar specimens.

Distribution.—Peninsular India south of the Himalaya.

Length of horns on front.		Circumference.		Tip to Tip.		Locality.	Owner.		
Rear.	Fore.	Rear.	Fore.	Rear.	Fore.	Locality.	O WILET.		
$4\frac{1}{2}$	$2\frac{3}{4}$	$2\frac{1}{2}$	$2\frac{1}{4}$	3		?	G. Masters.		
$4\frac{1}{2}$	$2\frac{1}{4}$	23 23	$2\frac{1}{4}$	3		?	Major J. C. B. Statham.		
48	$2\frac{1}{2}$	2.1	28	15	$2\frac{7}{8}$?	Sir Edmund G. Loder, Bart.		
4	$2\frac{1}{2}$	15	178	3	I \$	Indore	British Museum (Col. J. Evans).		
4	2	3	15	1#	$2\frac{1}{2}$	Karkote Jungle, near Mhow	Col. G. D. F. Sulivan.		
4	$2\frac{5}{16}$	2	$I\frac{7}{8}$	$\mathbf{I}_{\frac{1}{2}}^{\frac{1}{2}}$?	C. Cunningham.		
4	18	$2\frac{1}{2}$	12	24		Central Provinces	Hon. Walter Rothschild.		
34	I	21	2	ıĝ		Do.	Major A. D. Greenhill-Gardyne.		
3∄	2	21	21/4	15		Do.	W. Moylan.		

OWNER'S MEASUREMENTS.

5						Jhalawar		H.H. Maharaj Rana Bahadur of Jhalawar.
42	$2\frac{1}{2}$	21	1 🖫	2 %	I	Lulitpur		General Walker.
41	15					?		J. D. Inverarity.

NILGAI 301



Head of Nilgai.

The NILGAI or BLUE BULL (Boselaphus tragocamelus).

This ungainly and small-horned antelope is an Asiatic representative of a group whose other members, apart from the chousingha, are African. Most are large, and, with the exception of the elands and bongo, lack horns in the females. In the males the horns are angulated in front and generally spirally twisted, but in no case ridged. Face glands are wanting in the African genera, the muzzle is naked, and the tail is either hairy throughout or long and tufted. The upper cheek-teeth have broad crowns. The females have four teats.

From the other members of the group the nilgai is readily distinguished by its short, upright horns, which, although angulated in front, show no distinct spiral twist. With a long and pointed head, this antelope has the fore-legs considerably longer than the hind pair; and it is chiefly to this peculiarity that its ungainly appearance is due. Both sexes have a mane on the neck, but the bulls alone possess a tuft of long hair on the middle of the throat. The general colour of the adult bull is dark grey, tinged with blue or brown; but the mane and tufts of long hair are black, and streaks and patches on the face, ears, and throat, the chin, the under-parts, the lower surface of the tail, a streak down the buttocks, and a ring above and below each fetlock, are white. Height at shoulder, from 4 feet 4 inches to

85

5

4 feet 8 inches. The late Mr. A. O. Hume shot a specimen in the Aligurh district in 1855 in which the horns measured $11\frac{3}{4}$ along the front curve, with a circumference of $9\frac{1}{2}$. They were unfortunately destroyed in the Mutiny.

Distribution.—The peninsula of India, from the foot of the Himalaya to the south of Mysore; common in parts of the Eastern Punjab, the United Provinces, Guzerat, and the Central Provinces.

T	Circum-					
Length on front.	ference.	Tip to Tip.	Locality.		Owner.	
$9^{\frac{1}{1}\frac{5}{6}}$	9₹	$5\frac{1}{2}$	5		Sir Edmund G. Loder, Bart.	
$9\frac{1}{2}$	$6\frac{1}{2}$	6	3		Major G. F. Mockler.	
$9\frac{1}{2}$	$7\frac{1}{2}$	6.}	3		J. Whitaker.	
9₹	83	55	Nepal Terai .		Capt. J. L. Sleeman.	
91	63	4 \$?		British Museum.	
91	7월	7#	5		Capt. G. W. Hemans.	
9	$6\frac{5}{8}$	35	?		British Museum (Hume Col-	
9	81	65	United Provinces		lection). A. V. Wilcox.	
$8\frac{7}{8}$	$6\frac{1}{2}$	5 ¹ / ₄	Central Provinces		C. D. Twopeny.	
8::	6‡	5 ³ / ₄	Bhurtpur		LieutCol. J. M. Fawcett.	
84	8	6‡	Central Provinces		Duke of Peneranda.	
S:3		5₹	Do		Capt. L. P. Haviland.	
83		7	Do		Capt. F. A. B. Johnstone.	
82		$8\frac{1}{2}$	3		J. Gouldsmith.	
85	81	6‡	Bhopal		C. H. Payne.	
81	71/2	$4\frac{3}{4}$	Central Provinces		Capt. E. H. R. Hibbert.	
81/2	8	54	Do.		Major C. D. White.	
$8\frac{1}{2}$	74	5	?		H. T. Cawley.	
		OW	NER'S MEASURE	MEI	NTS.	
101	7 2	54	Baratpur		Capt. R. W. Hutton.	
104	74 81/2	6 ‡	United Provinces		Capt. W. R. P. Henry.	
10	$9\frac{1}{2}$	5	Agra		J. W. Pickthall.	
915	78	6€	Central Provinces		M. Rawlence.	
91	81		Bhurtpur		Major E. R. Gordon.	
9	7	7	Muttra		Capt. S. H. Charrington.	
9	6	5월	Bignor		R.E. Mess, Roorkee.	
83			Jumna Valley .		Indian Museum.	
83	7		United Provinces		C. Rose.	
			and the second s			

Oudh . . . Mess, 3rd Gurka Rifles.



Skull and Horns of Bushbuck in the Collection of the Hon. Walter Rothschild.

The BUSHBUCK (Tragelaphus scriptus).

Abu Nabah, Sudani.

Assali, Danakil.

Bata, M'Kua.

Chiwalawala, Chilala and Chibisa.

Boschbok, Cape Dutch.

Ibawara, Lower Zambesi.

Imbabala, Swazi and Matonga.

Inkonka (male), Imbabala (female),

Zulus.

M'babala, Barotsi.

Mazo and B.

Ngabi, Waga

Scrolobutuku

Ungurungu,

Dol, Somali.

Decula, Aby.

Shichibange,

M'babala and Serolo buchuhu,
Ngami.
Mbawara, Swahili.
Mazo and Bŭlŭmgito, Hausa.
Ngabi, Waganda.
Scrolobutuku, Bamangwato.
Ungurungu, Makuba.
Dol, Somali.
Decula, Abyssinian.
Shichibange, Chila.

The bushbucks, or harnessed antelopes, form an extensive group of species nearly allied to the kudus, but usually displaying great sexual differences in the colour of the coat, and generally having a simpler spiral to the horns. The does are nearly always striped with white on a chestnut ground, but the bucks may be darker and more uniformly coloured. As in the kudus, the females are hornless. The true bushbuck is the smallest and at the same time the most widely spread member of the group, having many local races. The height at the shoulder ranges from $2\frac{1}{2}$ to 3 feet, and the weight from 100 lbs. to 170 lbs. Bucks have a crest of long hair, which may be white and erectile along the middle of the back; while in many, and especially

the southern races, there is a collar round the neck on which the hair is quite short. In the Abyssinian T. scriptus decula, which ranges into the forests bordering the Webbe in Somaliland, and is known as dol, the build is low and stout, and the general colour cinnamon, the light stripes being nearly obsolete. The Nile T. s. bor is allied. In the West African T. s. typicus, from West, Central, and South-Central Africa, the ground-colour is bright rufous, and the spots and stripes are very conspicuous. In the Limpopo T. s. roualeyni the bucks are dark brown, with only faint indications of white markings, but in the Cape T. s. sylvaticus the colour is dark brown without transverse white stripes, and the spots are reduced to a few indistinct ones on the haunches and behind the shoulder. The bucks of the Arusi T. s. meneliki are nearly black, with much white on the legs and a dark dorsal crest; and those of the smaller Shoan T. s. powelli are also dark, but with white tips to the dorsal crest and dark legs. Many other races have been named, several based on specimens in the collection of Major Powell-Cotton.

As an abnormality, females may carry horns. In bushbuck, kudu, and nyala the outer edge of the tips of the hoofs is rounded, thus producing very characteristic slots.

Many of the following belong to the Cape *T. s. sylvaticus*, but the one from the Limpopo represents *T. s. roualeyni*, while the specimens from Nyasaland and neighbouring districts belong to other races.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.			Owner.
214	$6\frac{1}{2}$	$7\frac{1}{2}$	B.C. Africa			Dr. J. O. Shircore.
201	63	6	Do			Hon. Walter Rothschild.
2010	67	103	;			Sir Edmund G. Loder, Bart.
20	61	5½	B.C. Africa .			W. Kirby Green.
193	63	7	Do			G. Dickie.
194	6‡	$4\frac{1}{2}$	Upper Shiré Valley			Hon. Walter Rothschild. (See illustration.)
193	$6\frac{1}{2}$	83	N.E. Rhodesia			H. S. Thornicroft.
19	55	34	B.C. Africa .			Dr. J. E. S. Old.
18∄	6	103	?			Sir Edmund G. Loder, Bart.
183	6	85	Pungwé			P. H. Illingworth.
181	61	91	S. Africa			Col. E. St. C. Pemberton.
181	51/2	83	B.C. Africa .			J. Sealy Bell.
181	6.1	74	E. Transvaal .			Major J. Stevenson-Hamilton.
181	61	7	N.W. Rhodesia		-	G. de P. Colvile.
172	51/2	41	Zululand			Sir Abe Bailey.
171	6	5‡	N.E. Gazaland.			A. M. Naylor.
171	7	73	Near Port Shepstone	2.		Major E. H. E. Abadie.
17.1	67	7.1	S.E. Africa .			H. Miller.
171	6	31	Do			Sir Owen Philipps.
171	$7\frac{1}{2}$	52	?			British Museum.

Length on front curve.		Tip to Tip.	Locality.		Owner.			
17	$5\frac{1}{2}$	St	Zomba, B.C.A		. C. C. Bowring.			
162	5 3	78	B.C. Africa .		R. H. Storey.			
161	5흫	$7\frac{3}{4}$	Pungwé		Major G. T. M. Bridges.			
164	6	7	N.W. Rhodesia.		. R. E. Critchley-Salmonson.			
16	61	$7\frac{1}{4}$	Do		. Capt. Sir K. Fraser, Bart.			
16	5≟	$4\frac{1}{2}$	Do.		. W, H. Tapp.			
			OWNER'S MEA	SUF.	REMENTS.			
1976	54	ΙΙ	Lower Zambesia		. Fleet-Surgeon W. H. S. Stalkartt, R.N.			
18	$6\frac{1}{2}$	$12\frac{1}{2}$	B.C. Africa .					
$17\frac{1}{2}$	$6\frac{1}{2}$	7\$	Zomba, B.C.A.		. D. MacAlpine.			
$17\frac{1}{2}$	$5\frac{1}{2}$	103	Limpopo Valley		. Grahamstown Museum.			

The following belong to the West African T. s. typicus:—

Length on front curve.		Tip to Tip.	Locality.				Owner.			
í3 ¹ / _±	5	$4\frac{1}{2}$	N. Nigeria				Capt. W. M. Fowler.			
13	5‡	6	Do.				Capt. L. C. Brodie.			
121	5‡	$2\frac{7}{8}$	Nigeria .				Capt. H. T. G. Moore.			
I 2 1/4	5	5	Do				Major J. A. Burdon.			
121	5	5	Do				Capt. G. C. Kelly.			
$12\frac{1}{8}$	51		Do				Capt. W. C. Street.			
12	$4\frac{1}{2}$	$4\frac{1}{2}$	Do				Capt. W. H. Wilkin.			
12	5	63	Do				Major-Gen. P. S. Wilkinson.			
I 2	5 1	$I\frac{7}{8}$	Senegambia				G. Fenwick-Owen.			
113	61	43	S. Nigeria				Capt. R. M. Heron.			
I I ½	5	4^{3}_{4}	Nigeria .				Capt. N. F. Baynes.			
11	5	$4\frac{3}{4}$	Sierra Leone				R. H. Gill.			
101	5	$4\frac{1}{2}$	Nigeria .				Capt. A. K. O'Brien.			
10½	$4\frac{1}{2}$	$2\frac{1}{4}$	Gambia .				British Museum (13th Earl of Derby).			
101	$4\frac{1}{4}$	4 ¹ .	Gold Coast				T. E. Fell.			
9 7	$4\frac{1}{2}$	2§	Do				Capt. A. H. Hobbs.			

The following belong to the Masai T. s. masaicus:—

Length on front curve.		Tip to Tip.	Locality.			Owner.		
$20\frac{1}{2}$	7	$8\frac{1}{2}$	East Africa				Capt. J. A. Morrison.	
182	6.1	$5\frac{1}{2}$	Do.				R. P. Carroll.	
182	5½	$8\frac{1}{2}$	Do.				Sir Abe Bailey.	
18	61	$7\frac{1}{2}$	Do.				Gerard Buxton.	
18	7 ³	7‡	Uganda .				J. Leslie.	
18	7	6.1	East Africa				Capt. J. W. H. D. Tyndall.	
$17\frac{7}{8}$	6‡	5 7	Do.				Sir John Kirk.	
							\"	

Length on front curve.	Circum- ference.	Tip to Tip.	Lo	cality.			Owner.
17‡	$6\frac{1}{2}$	63	East Africa				R. J. Church.
17‡	$6\frac{3}{4}$	6	Do.				R. B. Loder.
17	$7\frac{1}{8}$	$7\frac{1}{2}$	Do.				J. Hall.
17	7	8	Uganda .				H. Twyford.
17	6	9	Do				Marquis of Tweeddale.
17	6	10	Do				Capt. C. Brook.
163	6	7	Do				T. D. M. Cardeza.
16 <u>3</u>	$6\frac{1}{2}$	$7\frac{3}{4}$	Do				J. K. Hill.
163	7	4	East Africa				I. N. Dracopoli.
165	$5\frac{7}{8}$	6‡	Manda Island	١.			British Museum.
$16\frac{1}{2}$	7	7	East Africa				Sheffield Neave.
16½	61	S	Do.				Major H. B. Dalgety.
16½	7	7 ½	Do.				E. H. Litchfield.
$16\frac{1}{2}$	6	7章	Do.				F. W. Belt.
16½	6	$4\frac{1}{1}$	Do.				Count B. Tyszkiewicz.
16 <u>3</u>	6‡	9	Do.				Hon. H. Brougham.
16‡	$6\frac{1}{2}$	7	Do.				F. C. Selous.
			OWNER'S	MEA	SUR	ЕМ	ENTS.
20 <u>0</u>	7	6	East Africa				C. S. Mann.
183	78	6∺	Unyoro .				F. A. Knowles.
17 2	5₽	3	East Africa				Capt. C. H. Elliot.
161	6‡	5½	Do.				S. E. White.

The following belong to the Upper Nile T. s. bor:—

Length on front curve.	Circum- ference.	Tip to Tip.	Locality	·.		Owner.
$14\frac{1}{2}$	4 ³ / ₄	$5\frac{1}{2}$	Sudan .			The late Capt. H. S. Logan.
I 3½	6	5 ½	Blue Nile .			Capt. J. A. Pollock.
$13\frac{1}{2}$	5		Do			G. L. Harrison.
$13\frac{1}{2}$	5 ½	43	Bahr-el-Ghazal			Major R. B. Airey.
138	6	143	Do.			Capt. H. M. Hutchinson.
138	6	5‡	Setit Valley			W. B. Cotton.
13 ¹ / ₄	6	4. ^L	Sudan .			Capt. C. E. Hills.
13	5½	$4\frac{1}{2}$	Do			Capt. B. W. Y. Danford.
13	5	6	Do			Capt. A. C. Jeffcoat.
125	5輩	5 🖁	White Nile			Earl of Kingston.
124	5½	$3\frac{1}{4}$	Do.			E. C. Crispin.
123	5½	$4\frac{3}{4}$	Dinder Valley			C. Bower Ismay.
$12\frac{1}{2}$	5	51	S. of Abukutu			Major R. M. Sanders.
121	5 5	28	Sudan .			Prince Colloredo Mannsfeld.
128	45	54	White Nile			G. C. Whitaker.
121	5	5	Sudan .			Col. E. G. T. Bainbridge.
121	64	45	Blue Nile .			J. G. O. Thomson.
12.	51		Sudan .			G. C. Brock.



Head of Bushbuck.

Of the following specimens some belong to the Abyssinian T. s. decula, but the one from the Hawash River represents T. s. multicolor, while the Somali examples may be either T. s. delamerei, or T. s. fasciatus.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.			Owner.		
19½	$6\frac{1}{4}$	89	Somaliland .			C. S. Mann.		
19\frac{1}{8}	6‡	71	Do			Hon. Walter Rothschild.		
$13\frac{1}{2}$	5∄	$4\frac{1}{2}$	Harar, Abyssinia			Ivor Buxton.		
12 ⁷ / ₈	51	5‡	Abyssinia			R. Hayne.		
12	6	4	Do			Lord Wodehouse.		
12	5 1 8	5 ¹ / ₈	Do			British Museum.		
II3	6	5 1/2	Do			A. E. Butter.		
II 1 2	4 \frac{7}{8}	48	Do			Major P. H. G. Powell-Cotton.		
11	43	5 1/4	Do			Sir Edmund G. Loder, Bart.		
ΙΙ	$5\frac{1}{8}$	5	Setit Valley .			Col. Ralph Vivian.		
11	$4\frac{3}{3}$	2§	Northern Abyssinia	٠	٠	British Museum.		
			OWNER'S MEAS	SURI	ЕМЕ	NTS.		
17	•••		Somaliland .			Col. H. G. C. Swayne.		
161	61	5	Do. · .			A. H. Straker.		
134	$5\frac{1}{2}$	5‡	Harar, Abyssinia			Prince de Lucinge.		
I 2 ½	5‡	3‡	Hawash Valley, Ab	yssin	ia	Viscount Edmond de Poncins.		



Horns of Nyala. From a specimen presented by the late Mr. Rowland Ward to the British Museum.

The NYALA (Tragelaphus angasi).

Nyala, Zulu.

Bo, Nyasa.

This representative of the bushbuck group is a large, delicately built species, standing about 3 feet 6 inches at the shoulder. Weight, about 250 to 300 lbs. In the males the hair is long and soft, forming a fringe on the throat and the under-parts of the body, and a white crest along the back, the general colour being dark slaty grey, with a few indistinct white transverse stripes. In females the hair is short throughout, and the general colour bright reddish chestnut, with numerous distinct white stripes. The lower parts of the legs are tan, and the hoofs are short.

Distribution.—South-east Africa, including Zululand, Delagoa Bay, and Nyasaland; on the West Coast it has been reported from Angola, although this form may indicate a distinct local race.

Len	gth.									
On front curve.	Straight.	Circum- ference.	Tip to Tip.	Locality.	Owner,					
31 1/2	26	8.5	12_{\pm}^{3}	Zululand	British Museum (Late Rowland Ward).					
318	248	81	$9\frac{1}{2}$	Do	Hon. Walter Rothschild.					
313	$24\frac{1}{2}$	8‡	$3\frac{1}{2}$	Shiré Valley, B.C.A.	Fergus Maclagan.					
301/2	2 4 ⁷ / ₅	81	17	?	Sir Owen Philipps.					
2 9‡	23	8	13	S.E. Africa	Col. Lord Douglas Compton.					
29§	25	$7\frac{7}{8}$	141	Zululand	Surgeon-Gen. Sir D. Bruce.					
291				Delagoa Bay	American National Collection.					
29‡	$24\frac{1}{2}$	9	13	?	C. B. Addison.					
28 3	$22\frac{1}{2}$	8‡	81/2	S.E. Africa	H. L. Pattinson.					
$28\frac{1}{2}$	$23\frac{3}{4}$	8	I 2 4 3	Zululand	Hon. Walter Rothschild.					
28½	22	$8\frac{1}{2}$	$7\frac{1}{2}$	Do	C. S. Jameson.					
28½	$23\frac{1}{2}$	$7\frac{3}{4}$	I I $\frac{1}{2}$	Do	H. C. da Costa.					
28‡	$2I_{4}^{1}$	7‡	94	Delagoa Bay	R. T. Coryndon.					
284	241	$7\frac{3}{4}$	13	Do	Capt. R. Meinertzhagen.					
281	24	$7\frac{1}{2}$	9	Do	Col. E. St. C. Pemberton.					
28½	235	81	9	Do	H. W. Elliott.					
28	24	8	15	Katanga, B.C.A	John Yule.					
28	23	7‡	134	Near Chiromo, B.C.A.	Surgeon J. Dowson, R.N.					
28	$22\frac{3}{4}$	7‡	${\rm I}7\tfrac{1}{2}$	Delagoa Bay	F. A. R. Zurcher.					
$27\frac{3}{4}$	$22\frac{1}{2}$	8	$10\frac{3}{4}$	Do	G. L. Harrison.					
$27\frac{3}{4}$	$23\frac{3}{4}$	8	151	Do	R. T. Coryndon.					
$27\frac{3}{4}$	$22\frac{1}{2}$	$7\frac{1}{8}$	10	Do	Marquis Pizzardi.					
$27\frac{1}{2}$	$22\tfrac{1}{2}$	8	$9\frac{1}{2}$	Do	Major-Gen. Sir J. Dartnell.					
$27\frac{1}{2}$	$22\frac{1}{4}$	$7\frac{5}{8}$	$8\frac{1}{2}$	Do	C. D. Rudd.					
$27\frac{1}{2}$	20	8	51	Do	R. Elliott-Cooper.					
27½	$23\frac{1}{2}$	$7\frac{1}{2}$	158	Do	Sir H. J. Goold-Adams.					
27	218	$7\frac{1}{2}$	$9\frac{1}{2}$	P.E. Africa	H. C. Brocklehurst.					
	OWNER'S MEASUREMENTS.									

OWNER'S MEASUREMENTS.

30	? C. S. Mann.
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Skull and Horns of the Mountain Nyala. From the specimen presented by Mr. Ivor Buxton to the British Museum.

The MOUNTAIN NYALA (Tragelaphus buxtoni).

Allied in the form of the horns and the colouring of the male to the nyala, but nearly as large as the typical kudu, and the two sexes nearly similar in colour. The male has a dark-brown coat of moderate length, with the usual face-markings; the under surface of the lower jaw, two gorgets on the throat and chest, a few spots on the flanks, and in some cases two stripes—one larger than the other—white. There is no fringe on the under-parts, but a crest of longish white and black hairs along the back. Legs with the front surface much like the back in colour, but elsewhere white. Horns with yellow tips; varying somewhat in form, and intermediate in this respect between those of the nyala and the kudu.

Distribution.—The Sahatu (Shabatu) Mountains of North-western Gallaland, to the east-north-east of Lake Zuay (Zwei).

Leng	gth.	0.	my .	Locality.		Owner.		
On outside curve.	Straight line.	Circum- ference.	Tip to Tip.					
44	$27\frac{1}{2}$	10	21g	E. of Lake Zuay .		R. Hayne.		
39	$30\frac{1}{2}$	$9\frac{3}{4}$	22	Sahatu Mountains.		M. C. Albright.		
37	$26\frac{1}{2}$	91	21	Do		British Museum (Ivor Buxton).		
364	25	10	$14\frac{1}{2}$	Arusi Country .		Hon. Walter Rothschild.		
334	264	$9\frac{1}{2}$	I 2 \frac{3}{4}	Do.		Lord Wodehouse.		
334	26	87		Sahatu Mountains		Ivor Buxton.		
3178	233	$9\frac{1}{8}$	6	5		D. R. Brodie.		
294	$2I\frac{1}{2}$	9	$10\frac{1}{2}$	Arusi Country .		C. S. Mann.		
29	23	81	103	?		Rowland Ward Collection.		



Horns of Situtunga. From Mr. John Yule's specimen.

The SITUTUNGA (Tragelaphus [Limnotragus] spekei).

Situtanga, Barotsi. Zowi, Chilala and Chibisa. Mluri, Duala. Nakong, Batauwani of Lake Nkaya and Nkoko, Congo. Ngami. Njobi, Waganda. N'zoi, Lakanga.

Kawi, Cameruns. Situtunga, Puvula, Unzuzu, Chobi and Central Zambesi. Shichinzebe, Chila.

The typical situtunga differs from the other members of the group by the elongation of the hoofs, which are thus adapted for supporting the weight of the body on the spongy soil of the marshes in which these antelopes dwell. The lateral hoofs are much more developed than in the other species. In the typical eastern race from the Victoria Nyanza district the adult males are uniformly greyish brown without stripes, while the females are rufous with faint stripes. On the other hand, in the Zambesi T. s. sclousi, the adults of both races are uniformly greyish brown. In the western T. s. gratus, the colouring

of the upper-parts approximates to that of the nyala, the ground-colour of the male being brownish grey, and that of the female bright rufous, marked in both with white stripes on the back and spots on the face and flanks, with two white gorgets on the throat. There is no fringe on the throat. In *T. s. albonotatus*, of which the habitat is unknown, the white face-markings are larger. Height at shoulder, from about 45 to 48 inches. The horns of the males are longer and more twisted than in other members of the genus, and wear yellow at the tips.

Distribution.—The situtunga is typically an inhabitant of the dense reed-swamps bordering the rivers of Central, South-Central, and East Africa. These antelopes are semi-aquatic in habits, frequently sinking themselves up to the eyes in the water. Consequently they are some of the most difficult of all antelopes to kill; but by firing the reed-beds in the dry season, the natives are able to spear the situtunga as they cross open water. At night these antelopes leave the reed-brakes for the islands in the rivers, but before dawn return to their impenetrable covert. A few are found on a bush-clad rocky island far out in the Victoria Nyanza; in which neighbourhood the species was first discovered by Captain Speke.

A.—TYPICAL and CHOBI RACES (T. spekei typicus).

Leng	gth. ,						
On front curve.	Straight line.	Circum- ference.	Tip to Tip.	Locality.			Owner.
35	28 3	8	26	Bahr-el-Ghazal			Hon. Walter Rothschild.
328	26½	84	123	Uganda .			Lord Cranworth.
30	24	7	17‡	Bahr-el-Ghazal			Major R. B. Airey.
294	24	$7\frac{1}{2}$	19	Do.			Lieut. W. B. Drury, R.N.
28±	$23\frac{1}{2}$	7 ⅔	20	Do.			Capt. P. E. Vaughan.
$27\frac{1}{2}$	22	7 7 8	I I 1/4	Do.			Col. J. J. Asser.
27½	23	$7\frac{1}{2}$	II 3	Uganda .			J. Leslie.
25½	$22\frac{1}{2}$	71	91	E. Congo .			Major W. I. Webb-Bowen.
23 7		73	6⊒	Lake Kivu .			N. A. H. Campbell.
23	182	$6\frac{3}{4}$	83	Uganda .			C. E. Lamb.
1 22 $^{1}_{2}$	201	7	$_{\rm II_2^1}$	Do			Major de Courcy Ireland.
22	19		75	Do			Major R. H. Price.
				(T. s. selousi)).		
35§	285	8	15½	Lake Mweru			Hon. Walter Rothschild.
$35\frac{1}{2}$	$29\frac{1}{2}$	8§	191	B.C. Africa			F. E. F. Jones.
35	$24\frac{1}{2}$	71	141	N.E. Rhodesia			J. Turner.

¹ In the collection of Sir Hy. E. M. James.

Leng	gth.				
On front curve.	Straight line.	Circum- ference.	Tip to Tip.	Locality.	Owner.
35	27	7	8	N.E. Rhodesia .	. J. E. Hughes.
35	28	$7\frac{1}{2}$	151	South end of Lake Tanganyika	John Yule. (See illustration.)
34	28	8	${\rm I}7^{33}_{4}$	37 Y2 721 1 4	J. C. Phillips.
34	278	74	151	Do	. Earl of Kingston.
337	$27\frac{3}{4}$	$7\frac{1}{2}$	14%	Do	. R. D. Waterhouse.
331	264	8	16§	Okavango Valley	. Sir H. J. Goold-Adams.
324	27 8	7 ³	26 5	Chinde	. Hon. Walter Rothschild.
328	27	7 ½	16§	Chobi Valley .	F. C. Selous.
$32\frac{1}{2}$	$25\frac{1}{2}$	$7\frac{1}{2}$	73	N.W. Rhodesia .	. A. J. Brandon.
325	25 ³ / ₄	8	$19\frac{1}{2}$	Do	. A. F. Williams.
32	25	84	164	?	G. M. Bond.
314	26½	$S_{\frac{1}{4}}$	174	N.E. Rhodesia .	J. H. Whitehouse.
31½	24 ³ / ₈	7	16 ¹ / ₈	Chobi Valley	British Museum (F. C. Selous).
$31\frac{1}{2}$	235	8	15	Ngamiland	. Mervyn G. Williams.
312	25 4	7 1/2	134	Bangweolo	F. Smitheman.
312	27	78	2 I $\frac{1}{2}$	N.W. Rhodesia .	Dr. W. D. Waterhouse.
311	26‡	7 1	242	Ngamiland	. H. D. Hannay.
31,1	251	8	15#	?	N. H. Barton.
31‡	25 ¹ / ₄	73	175	Ngamiland .	. F. T. Garbutt.
31	$23\frac{3}{4}$	8	$9\frac{1}{2}$?	G. Richards.
303	$26\frac{1}{2}$	$7\frac{1}{2}$	16	N.E. Rhodesia .	. H. Cookson.
301	241	8‡	14%	Barotsiland .	. Sir Edmund G. Loder, Bart.
301	$25\frac{1}{2}$	71	16 ³	Do	. Major J. Carden.
30½	$24\frac{1}{2}$	71	121	B.C. Africa .	. Grahamstown Museum.
30]	25#	7 1/2	193	N.W. Rhodesia .	. G. L. Harrison.
304	251	8	143	Do	. A. C. Brandon.
30	$24\frac{1}{2}$	S	$14\frac{1}{2}$	Do	. Sir Owen Philipps.
30	241	7.3	16	Do	. E. McClellan.
30	24	8	16	Bechuanaland .	. Sir Ralph Williams.
25½	$22\frac{\Omega}{1}$	7월	132	Angola	. Major Boyd A. Cuninghame.
24.	21	63	91	Do	. C. H. Pemberton.
203	18.1	61	10	Benguela	. G. W. Penrice.
1		,			
			OWNE	CR'S MEASUREMEN	NTS.
341	281	7 🗄	21	N.W. Rhodesia .	. C. S. Mann.
332	275	73	19	2	Sir Abe Bailey.
1317	25 1.	7 7 7	148	Congo	Paris Museum (S. de Brazza).
3.4	~314	1-	*48	Congo	

¹ Determination provisional.



Horns of Western Situtunga from the Gambia.

B.—WESTERN RACE (T. spekei gratus).

Len	gth.									
On front curve.	Straight line.	Circum- ference.	Tip to	Loc	cality.			Owner.		
34 ³ / ₄	$28\frac{1}{2}$	8	21	Gambia				H. C. Goddard.		
324	$27\frac{1}{4}$	9 ¹ s	16 <u>1</u>	Gabun				Sir Edmund G. Loder, Bart.		
32§	251	7	S	Gambia				Hon. Walter Rothschild.		
304	$26\frac{7}{8}$	8	145	French Co	ongo			Do.		
30	26‡	7章	14%		5			Sir Abe Bailey.		
291	241	S ₈ ¹	14	Gabun				American National Collection.		
$2S_{\frac{1}{2}}^{1}$	23	8	8	Gambia	٠.			A. Ohlsson. (See illustration.)		
$27\frac{1}{2}$	22 ³ / ₈	81	61	N. Nigeri	a .			J. C. Sciortino.		
27	231	8	13 7	Gabun				F. M. Milligan.		
$25\frac{3}{4}$	211	63	121	Gambia				Guy H. Sangster.		
244	21	7	154	S. Nigeria				C. E. Stuart.		
241	$2I\frac{1}{2}$	7 5 8	10	Do.				A. W. Hunt.		
	OWNER'S MEASUREMENTS.									

 $27\frac{1}{2}$... $8\frac{1}{2}$ $14\frac{1}{4}$ Nigeria . . . A. F. Williams.

The KUDU (Strepsiceros capensis, or S. strepsiceros).

Agarzin, Abyssinian.

Ibala-bala, Amandebili.

I-zilarwa, Makalaka.

Dwar, Masara.

Godir, Somali.

Itolo, Basuto.

Itshongonons, Swazi.

Muziloua, Batonga.

Nylat, Sudani.

Kudu, Hottentot.

Ngomo, Chilala and Chibisa.

Noro, Mashona.

Tata, M'Kua.

Tolo, Bechuana, Barotsi, and
Ngami.

Unza, Mazubia.

Unzwa, Makuba.

Shombololo, Chila.

Although rather less brilliantly coloured than some of the bush-bucks, the two kudus are among the handsomest of all antelopes, their spiral horns, striped coat, and noble carriage rendering them really magnificent creatures. Their chief difference from the bushbucks is to be found in the fuller spiral formed by the horns and the larger ears, both sexes being nearly similar in colour. The special characteristics of the greater or true kudu are the large size (height at shoulder reaching to 4 feet 10 inches or 5 feet), the presence of a thick fringe of long hair on the throat, and the open spiral of the horns of the bull. The colour is too well known to require description. The Somali kudu (S. c. chora) differs from the typical southern form in having only about five transverse stripes instead of the usual nine or ten.

Distribution.—The kudu, in suitable localities, ranges over the greater part of Africa south of the Sahara, extending from Abyssinia and Somaliland through East and Central Africa to the Cape, and westward across the continent to Angola, where the Congo apparently forms its northern limits. In spite of its bulk, it is an adept at concealment; and this trait, coupled with its general wariness and acute sense of smell and hearing, has largely contributed to its survival in districts where it is much hunted. Except in the Uitenhage jungles, where it is preserved by British farmers, the kudu has been exterminated from Cape Colony. In Eastern Mashonaland it is still abundant, as it is in the highlands of Somaliland, in which country it is rarely met with on the plains. The Somali form inhabits less thickly wooded country than the southern race, and it is in accordance with this that it has fewer stripes.

Although unrivalled at traversing rocky hills, the kudu is by no means a good performer on the flat (where it seldom allows itself to be surprised), and can be ridden down without much difficulty by a fairly well-mounted hunter. Horned females occur rarely.

KUDU 317



Head of Kudu.

A.—TYPICAL RACE (S. capensis typicus).

Lengt	th.				
On outside curve.	Straight line.	Circum- ference.	Tip to Tip.	Locality.	Owner,
64	41	ΙΙ	23	Mashonaland .	F. C. Selous.
63	$48\frac{1}{2}$	$12\frac{1}{2}$	49	Macloutsie Valley	E. W. Tompson.
62 3	$42\frac{3}{4}$	I I ½	37 ¹ / ₄	?	Sir Owen Philipps.
61	40	112	141	N.W. Rhodesia .	M. Tennant.
605	45 8	II $\frac{1}{2}$	33	Macloutsie Valley .	F. C. Selous.
59½	413	12	30 1	Rhodesia	W. Griffin.
59½	44	$\operatorname{I}\operatorname{I}\tfrac{1}{2}$	$25\frac{3}{4}$?	S. T. Teague.
59½	434	II	38	South Africa.	W. A. Simpson Hinchliffe.

Leng	th.				
On outside curve.	Straight line.	Circum- ference.	Tip to Tip.	Locality.	Owner.
59 ¹ / ₄	42 ¹ / ₄	11 <u>5</u>	19	;	G. Richards.
59‡	$43\frac{1}{2}$	II $\frac{1}{2}$	30 3	N.W. Rhodesia .	. Col. H. Clifton Brown.
58∰	46 <u>1</u>	I 2	364	Do	. B. Ryan.
583	$44\frac{1}{2}$	11	$33\frac{1}{2}$	Do.	. Capt. H. T. Byas.
584	46	10	$39\frac{3}{4}$	South Africa	. Sir Abe Bailey.
584	441	12	41	N.E. Rhodesia .	. R. D. Waterhouse.
58	46	115	3 9	S.E. Mashonaland	. J. G. Millais.
58	46			Zomba, B.C.A.	. D. MacAlpine.
58	$43\frac{1}{2}$	101	32 1	Okavango Valley	. Sir H. J. Goold-Adams.
574	461	$12\frac{1}{\pm}$	434	S. Rhodesia	. A. Doughty.
57½	40%	I I 1/4	22 ³ / ₄	B.C. Africa .	. F. A. Coe.
57½	41	IIŠ	$21\frac{1}{2}$	N.E. Transvaal	. A. M. Naylor.
57½	412	10	27	Do.	. Capt. D. J. Marker.
$57\frac{1}{2}$	41	102	25	B.C. Africa	. J. H. Hayes.
$57\frac{1}{2}$	44	111	31	Transvaal	. Capt. A. C. H. Kennard.
$57\frac{1}{2}$	451	12	4 I	B.C. Africa .	. E. Homer.
57 ⁹	47	10%		Do	. J. B. Davey.
571	45₹	103	35	Do	. H. C. Macdonald.
57‡	$44\frac{7}{8}$	113	34 ³ / ₈	South Africa .	. Sir Edmund G. Loder, Bart.
$57\frac{1}{4}$	414	115	23	N.W. Rhodesia	. G. L. Harrison.
57 ¹ / ₄	$44\frac{1}{2}$	11	29	5	T. N. G. Jennings.
57	43	1.4	32	South Africa .	. A. Moseley.
57	42‡	11	31	Do	. LieutCol. M. D. Graham.
57	401	I 2	211	5	G. V. Blackwell.
57	401	12	24 ³ ₄	?	Capt. G. M. Spencer-Smith.
57	$45\frac{1}{2}$	$I2\frac{1}{2}$	403	;	T. Stephenson.
57	40!	10;	281	N.W. Rhodesia	. G. de P. Colvile.
56₽	43	I I ½	$30\frac{1}{2}$	Do.	. Capt. P. R. Bald.
56½	$43\frac{1}{2}$	I I ½	261	Matabililand .	. W. Van Ness.
561	4 I	10	$29\frac{1}{2}$?	J. W. Williamson.
561	41½	102	234	Matabililand .	. Hon. C. Greville.
56½	441	$11\frac{1}{2}$	374	N.E. Rhodesia	. Earl of Kingston.

KUDU 319

Let	ngth.								
On outside curve.	Straight line.	Circum- ference.	Tip to Tip.	Locality.		Owner.			
56½	$4I\frac{1}{2}$	11	28 3	S. Rhodesia .		R. C. Dundas Firth.			
$56\frac{1}{2}$	39	1 I ½	22	Do		Col. E. St. C. Pemberton.			
$56\frac{1}{2}$	41	II	$36\frac{1}{2}$	N.W. Rhodesia .		Sir J. Walton, Bart.			
♀ 37	10			South Africa		F. C. Selous.			
OWNER'S MEASUREMENTS.									
	$48\frac{7}{8}$			Ngamiland		American National Collection. (See illustration.)			
63½	$46\frac{7}{8}$	111	458	Upper Shiré Valley		Capt. C. H. Stigand.			
$63\frac{1}{2}$	47½		46½	N.W. Rhodesia		F. J. Nottage.			
63	$44\frac{1}{2}$		423	Near Teté, Zambesia		Major P. W. Forbes.			
63	39	$10\frac{1}{2}$	12	?		Mr. Justice Hopley.			
62		12,	27	Delagoa Bay		C. S. Mann.			
611/2	45½	$10\frac{3}{4}$	34	?		A. Griffiths.			
61‡	42 ¹ / ₄	103	$24\frac{3}{4}$?		J. C. Phillips.			
60 5	44		31	South Africa		H. T. and A. H. Glynn.			
60½	47	$10\frac{1}{2}$	$44\frac{3}{4}$	Do		A. Ohlsson.			

B.—SOMALI (S. c. chora) and EAST AFRICAN (S. c. bea) RACES.

Ler	ngth.						
On outside curve.	Straight line.	Circum- ference.	Tip to Tip.	Localit	у.		Owner.
61	$42\frac{1}{2}$	II	34	East Africa			The late G. G. Longden.
58‡	411	II	29	Do.			G. F. Archer.
58	43	10	40	Somaliland			G. Chetwynd.
57 1	42	I I 1/4	41	Lake Baring	0		The late H. Hyde Baker.
57	39	95	36½	Somaliland			H.R.H. the Duc d'Orléans.
57	40½	$9\frac{4}{3}$	28	Do.			Capt. J. H. Brocklehurst.
56½	35	108	30	Do.			Sir Edmund G. Loder, Bart.
$56\frac{1}{2}$	361	$8\frac{1}{2}$	$21\tfrac{1}{2}$	Do.			Dr. R. E. Drake-Brockman.
56	441	$10\frac{3}{4}$	$44\frac{1}{4}$	East Africa			H. C. Phipps.
55	$40\frac{1}{4}$	ΙΙ	$35\frac{3}{4}$	Do.			Major the Hon. C. H. C. Guest.
$54\frac{1}{2}$	39 ¹ / ₄	10	271	Sudan			Major the Hon. H. Fraser.
541	43	10;	3 9¾	Somaliland			Capt. R. A. McClymont.

Length.								
On outside curve.	Straight line.	Circum- ference.	Tip to Tip.	Localit	y.			Owner.
54 ¹ / ₈	38 7	101	22 5	Somaliland .				Major P. H. G. Powell-Cotton.
54	383	93/4	29 ³ / ₄	Do				Capt. E. J. F. Vaughan.
54	39	$IO_{\frac{1}{4}}^{\frac{1}{4}}$	32	Do				Norman B. Smith.
54	$40\frac{1}{4}$	10	384	Do				Capt. J. C. Monteith.
54	385	10	$2I\frac{1}{2}$	Sudan				LieutGen. Sir B. T. Mahon.
54	37	$10\frac{3}{4}$	$26\frac{1}{2}$	Somaliland .			٠	Capt. J. L. Baird.
534	$37\frac{3}{4}$	10	32	S. Abyssinia .				T. Morse.
535		$10\frac{3}{4}$	41	East Africa .				Major P. H. G. Powell-Cotton.
532	361	9	28	Sudan				Earl of Sefton.
53½	40	11	25	East Africa .				Hon. Guy Wilson.
53 1	36₽	9^{1}_{2}	13章	Somaliland .				P. K. Glazebrook.
$53\frac{1}{4}$	35	$9\frac{3}{4}$	$27\frac{1}{2}$	Do				H. J. T. Hamer.
53	412	II_{4}^{3}	$47\frac{1}{4}$	Lake Rudolf.				A. E. Butter.
53	383	$9^{\frac{1}{2}}$	29	Sudan				Earl of Kingston.
53	394	ΙΙ	$37\frac{1}{2}$	Lake Baringo				Capt. W. H. Nicolson.
53	361	10	$8\frac{1}{2}$	Sudan				Capt. G. Stewart.
52 ³ ₄	39 ³ / ₄	102	36	East Africa .				Capt. D. I. Shuttleworth.
521	$39\frac{1}{2}$	111	28	Do				Hon. Walter Rothschild.
52	$37\frac{1}{2}$	II $\frac{1}{2}$	$31\frac{1}{2}$	Do				Baron Maurice de Rothschild.
513	391	101	263	Do				Duchess of Sutherland.
51½	40	10	42	Sudan				LieutGen. Sir B. T. Mahon.
511	364	$II\frac{1}{2}$	$25\frac{1}{2}$	Somaliland .				Capt. A. E. H. Breslin.
512	341	10	19	Do				Capt. F. M. Ransford.
51}	381	11.1	32	East Africa .				K. V. Painter.
51	374	ΙΙ	32∄	Somaliland .				A. de L. Long.
51	332	9½	141	Do				Major G. G. Gilligan.
51	384	10	30	Sudan				Capt. A. C. Parker.
51	42	12.1	334	East Africa .	,			Dr. E. D. Anderson.
50%	34 i	10:	20,1	Somaliland .				J. H. Miller.
501	36%	91	334	Sudan .				Capt. J. A. Pollock.
501	394	10	31½	Do				Capt. S. J. Burton.
50	38	10	37	Somaliland .				P. H. Thomas.



Head of Lesser Kudu. Shot by Mr. Norman B. Smith.

The LESSER KUDU (Strepsiceros imberbis).

Andeiro or Godir, Somali. Gadams, Galla.

Sara, Danakil. Kungu, Swahili.

Except for its brighter colour, the closer spiral and smaller divergence of the horns, the absence of a fringe of long hair on the throat, the more numerous stripes, white throat-bands, and narrower ears, this antelope might almost pass for a miniature of its larger relation. Height at shoulder, about 3 feet 5 inches. Weight, about 230 lbs.

Distribution.—North-east Africa, from Somaliland to British and German East Africa. This antelope generally goes in pairs or threes, and is partial to the covert of thick bush, from which it seldom emerges except for the purpose of feeding. Its coloration is typical of that of forest-dwelling antelopes, and is essentially of a protective nature.

Leng							
On outside curve.	Straight line.	Circum- ference.	Tip to Tip.	Locality.			Owner.
351	26 1	$7\frac{1}{2}$	$16\frac{1}{2}$	Somaliland			Norman B. Smith.
35‡	$26\frac{1}{2}$	58	173	Do.			G. Chetwynd.
$34\frac{1}{2}$	25	7	143	Do.			J. Higgins.
34‡	26	$6\frac{1}{2}$	ΙΙ	Do.			Hon. Walter Rothschild.
34	$26\frac{1}{2}$			Do.			Col. H. G. C. Swayne.
34	26	$6\frac{3}{4}$	14‡	Do.			W. W. Ashley.
34	27	63	11	Do.	,		British Museum (R. McD.
$33\frac{1}{2}$	26 <u>1</u>	73	$10\frac{1}{2}$	Do.			Hawker). A. E. Butter.
$33\frac{1}{2}$	27	7‡	II $\frac{1}{2}$	Do.			Vicomte de Thiene.
3 3	25 ³ / ₄	$6\frac{7}{8}$	14	East Africa			The late A. H. Neumann.
$32\frac{1}{2}$	25½	7	8	Somaliland			LieutCol. T. R. Harkness.
321	$25\frac{3}{4}$	7	17	Do.			Sir Edmund G. Loder, Bart.
32	$24\frac{1}{2}$	7	$14\frac{1}{2}$	N. Somaliland			W. F. Whitehouse.
314	241	61	$14\frac{1}{2}$	Do.			Lord Delamere.
3112	251	63	115	Do.			Sir John Kirk.
$31\frac{1}{2}$	24	$6\frac{1}{2}$	12	Do.			T. W. H. Clarke.
31½	24	63		Do.		,	Col. C. C. Ellis.
31 ½	231	$6\frac{1}{2}$		Abyssinia.			R. Hayne.
314	25	7	10	Somaliland			Major G. F. T. Leather.
31	25	74	$9^{\frac{1}{2}}$	Do.			W. H. Cobb.
31	24	$6\frac{3}{4}$	$9\frac{1}{2}$	Do.			G. H. Cheetham.
31	231	7	$10\frac{1}{2}$	East Africa			Capt. G. F. Phillips,
31	$23\frac{1}{2}$	61	14	Do.			Major W. E. Stobart.
31	241	74	ΙΙ	Do.			Capt. G. V. Clarke.
$30\frac{1}{2}$	235	6	$9\frac{1}{2}$	Tana Valley			Capt. C. Hankey.
304	231	7	63	East Africa			W. H. Lindsay.
30	$22\frac{3}{4}$	63/4	151	Do.			C. Bower Ismay.
30	$23\frac{3}{4}$	7	13½	Do.			G. Blaine.
$29\frac{1}{2}$	234	63	141	Do.			A. J. B. Wavell-Paxton.
293	233	74	13	Do.			W. N. McMillan.
291	25	63	122	Do.			Capt. W. H. Wilkin.
29	231/2	7	94	Do.			Lord Wodehouse.
29	$22\frac{3}{4}$	7	14}	Do.		•	J. Giffard.
			OWNI	ER'S MEASUR	EM	EN'	TS.
36	$27\frac{3}{4}$	$7\frac{1}{2}$	20	?			A. Bolle.
33		$6\frac{1}{2}$	193	?			J. C. Phillips.

BONGO · 323



Head of Bongo.

The BONGO (Boöcercus euryceros).

This magnificent antelope, which comes next in point of size to the eland and kudu, was long considered a member of the bushbuck group, with which it agrees in the general type of colouring. It differs, however, in that the tail is tufted (like that of an eland), and also by the presence of horns in both sexes. The general colour of the coat is bright chestnut-red, marked with a number of narrow vertical white stripes, a white crescent on the breast, a white chevron on the forehead, two white spots below each eye, and some white marks on the legs; the front of the face being brown, with a tawny patch round each eye. In old bulls the coat becomes mahogany-colour. There is no dewlap, throat-fringe, or frontal tuft, and the hair is short. The worn tips of the horns are yellow. Height, about 4 feet.

Distribution.—West Africa, from Liberia, through Fanti to the Ashkankolu Mountains, the Gabun, and Sierra Leone, and thence

through the forest district to Uganda. The East African representative of the species has been named *B. e. isaaci*.

TYPICAL RACE.

Length.							
On front curve.	Straight line.	Circum- ference.	Tip to Tip.	Locality.			Owner.
♀ 37 ৡ	30	8	9	Ashanti .			Dr. M. Graves.
35	2 9₹	10	II	Do			Hon. Walter Rothschild.
35	291	ΙΙ	83	Do			D. H. M. Boyle.
34	29	I I $\frac{3}{4}$	16	Ivory Coast			British Museum (G. Chetwynd).
33		I 2	14	Ashanti .			T. E. Fell.
32 \$	25	$9\frac{3}{4}$	5	Gold Coast .			Capt. T. W. Breckenridge.
$32\frac{1}{4}$	26	$10\frac{3}{4}$	158	Do			Ivor Lewis.
321	26§	$10\frac{1}{2}$	I 2 1/4	Togoland .			C. Beddington.
31		ΙΙ	11	Do			British Museum.
$30\frac{1}{2}$	26	$10\frac{1}{3}$	$13\frac{1}{2}$	Sierra Leone			Capt. E. J. Carter.
301	$24\frac{1}{2}$	$9\frac{1}{2}$	9‡	West Africa			Sir Abe Bailey.
30	248	98	11 <u>1</u>	Ashkankolu M	ounta	ins	British Museum.
30	254	IO_2^1	13≩	Sierra Leone			Capt. E. R. A. Hall.
$29\frac{1}{2}$	$25\frac{7}{8}$	9孝	$10\frac{1}{8}$	Gabun .			British Museum (P.Du Chaillu).
$28\frac{1}{2}$	251	10	108	Cameruns .			J. C. Philipps.
$28\frac{1}{2}$	24	9	$5\frac{3}{4}$	Togoland .			Hon. Walter Rothschild.
♀ 27½	$24\frac{1}{8}$	$7\frac{1}{2}$	$4\frac{1}{2}$	Gold Coast.			Do.

EASTERN RACE (B. e. isaaci).

11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1									
Le	ngth.								
On front curve.	Straight line.	Circum- ference.	Tip to Tip.	Locality.	Owner.				
$39\frac{1}{2}$	325	111	16 <u>3</u>	East Africa	Sir Abe Bailey.				
36≩	$29\frac{1}{2}$	I I 🖟	ΙI	Mau Forest, E. Africa .	Pretoria Museum (Dr. Sauer).				
36‡	$30\frac{1}{2}$	I I $\frac{3}{4}$	$21\frac{5}{8}$	Do	J. Jay White.				
35 [₹]	29‡	II $\frac{1}{2}$	$12\frac{1}{2}$	Do, .	W. N. McMillan.				
333	$27\frac{5}{8}$	ΙΙ	13 3	Do	Hon. Walter Rothschild.				
$33\frac{1}{2}$	$27\frac{5}{8}$	ΙΙ	134	Do	G. L. Harrison.				
$33\frac{1}{2}$	27‡	$10\frac{1}{2}$	$15\frac{1}{2}$	Do	G. C. Whitaker.				
33		I 2	14	Do	J. H. Milton.				
304	254	II 1/8	15	Do	Sir Edmund G. Loder, Bart.				
9 30 2	$27\frac{1}{2}$	8‡	II	Do	Hon. Walter Rothschild.				
304	24#	ΙΙ	8	Do	Rev. S. Weeks.				
301	$26\frac{1}{2}$	11	16	Do.	Capt. J. A. Morrison.				
\$ 30	$27\frac{1}{2}$	$7\frac{1}{2}$	II 2	Do	A. F. Williams.				
\$ 29 1	26‡	8	3 1/2	Do	Capt. J. W. H. D. Tyndall.				
29	$24\frac{1}{2}$	104		Do	R. J. Church.				
29	$22\frac{7}{8}$	103	7	Do	The late G. Grey.				
281	$23\frac{1}{2}$	101	114	Do	A. W. Reid.				
§ 27½	25	8	$6\frac{1}{2}$	Do	Viscount Ennismore.				
9 25 4	22	$7\frac{3}{4}$	21	Do	W. N. McMillan.				
♀ 22½	211	7量	8	Do	Lord Wodehouse.				
\$ 21½		$7\frac{1}{2}$	3	Do	Capt. M. Kincaid-Smith.				

ELAND 325



Head of Eland.

The ELAND (Taurotragus oryx).

Du, Masara.
I-pofo, Makalaka.
Eland, Cape Dutch.
Impofo, Amandebili.
Insefo, Masubia and Batonga.
Mofo, Mashona.
Moju, Galla.
Mpofu, Barotsi and Ngami.

Ntamu, Waganda.

Msongo, Chilala and Chibisa.

U-schefo, Macuba.

Pakala, Makua.

Pofo, Bechuana.

Mpofu, Swahili.

Bŏggă, Sudani.

Musefu, Chila.

Eland, which are the largest of all antelopes, resemble the bongo in the presence of horns in both sexes; these forming a close spiral like a screw, with an upward and outward direction. They likewise resemble the bongo in possessing a long, tufted, ox-like tail, but have a distinct dewlap. Horns of cows are more slender than those of bulls.

Bulls of the eland stand from 5 feet 9 inches to perhaps as much as 6 feet at the shoulder. They have a large tuft of hair on the forehead, and the horns are of moderate length and stoutness. The typical race (T. oryx typicus), which formerly extended from the Cape nearly to the Zambesi, has a uniformly tawny skin, without transverse white stripes or a dark brown band above the knees, and appears to be the largest form. Farther north a dark brown knee-band is assumed by adult bulls; and towards the Zambesi, and thence north and east into the heart of the continent, the bulls have not only this dark knee-band, but the body in both sexes is marked by fine vertical white lines. The Zambesi race is named T. oryx livingstonei. In Mashonaland eland show an incomplete white chevron on the face, with a large brown tuft on the forehead; this race, as typified by heads figured in A Hunter's Wanderings, has been called T.o. selousi. In the British East African T. o. pattersonianus the sides of the forehead are chestnut in place of dark brown, a white chevron is present, the frontal tuft is shorter, and the pasterns are black behind instead of white. Westward the species ranges into Angola.

Throughout Southern Africa, largely owing to the skin-hunters, eland are now becoming exceedingly scarce; and they have already more or less completely disappeared from Cape Colony, Natal, the Orange River Colony, Griqualand West, and the Transvaal. In the Northern Kalahari, where they exist for a great part of the year without water, large herds still remain. Occasionally female eland develop horns in which the spiral is almost obsolete and the length exaggerated.

A.—ZAMBESI RACE (T. oryx livingstonei).

Length on front of horn.	Circum- ference.	Tip to Tip.	Locality.	Owner.
37	123	23‡	Barotsiland (N.W.R.)	T. G. Davey.
344	II $\frac{1}{2}$	27	B.C. Africa	F. E. F. Jones.
34	I 2 3/4	$22\frac{1}{2}$	N.W. Rhodesia	LieutCol. H. W. Wilberforce.
33₹	123	19	N.E. Rhodesia.	H. Cookson.
33	I 3 ½	141	N.W. Rhodesia	Major C. L. Graham.
324	$I2\frac{1}{2}$	$2I\frac{1}{4}$	Do	Dr. Ellacombe.
321/2	134	22 3	Do	G. Mitchell.
321	113	153	Do.	G. F. Watherston.
32	131	$12\frac{3}{4}$	Rhodesia	Major C. A. Sykes.
31 4	I 2 ½	$22\frac{3}{4}$	Do	Hon. Walter Rothschild.
313	11	17½	Do	T. N. G. Jennings.

Length on front of horn.	Circum- ference.	Tip to Tip.	Locality.		Owner.
31½	$12\frac{3}{4}$	$\mathbf{I}2^1_2$	Rhodesia		British Museum (F. C. Selous).
31½	12	$20\frac{3}{4}$	N.W. Rhodesia.		R. C. Wood.
3112	13	154	Do		Marquis Pizzardi.
3112	14	22	Do		Col. C. Harding.
31½	$13\frac{1}{2}$	9	Do		Dr. Sauer.
31‡	134	$13\frac{1}{2}$	Do		Norman B. Smith.
314	II $\frac{1}{2}$	$24\frac{1}{2}$	N.E. Rhodesia .	٠	J. E. Hughes.
311	$14\frac{3}{4}$	$14\frac{1}{2}$	S.E. Africa .		H. Knieson.
31	16	14	Rhodesia		F. C. Selous.
31	ΙΙ	$19\frac{1}{2}$	S. Africa		W. A. Simpson Hinchliffe.
31	$I2\frac{1}{2}$	$15\frac{3}{4}$	Rhodesia		H. H. Williams.
31	I 2	18	Do		R. T. Coryndon.
31	13	154	Do		Major J. P. Grenfell.
31	${\rm I}2\tfrac{1}{2}$	$II\frac{3}{4}$	Do		E. McClellan.
$30\frac{3}{4}$	121	201	N.W. Rhodesia .		J. H. Leche.
301	I I ½	$20\frac{1}{2}$	B.C. Africa .		Capt. F. D. Markham.
30½	141	10	Rhodesia		Capt. P. R. Bald.
301	12	$7\frac{1}{2}$	Do		G. Crompton.
30½	$12\frac{1}{4}$	$2I\frac{1}{4}$	Do		L. Messel.
301	$13\frac{1}{2}$	17 ³ / ₄	N.W. Rhodesia .		W. H. Rawnsley.
301	12	$16\frac{1}{2}$	S. Rhodesia .		W. Harcourt Webb.
30 ¹ / ₄	$\operatorname{II}\tfrac{1}{2}$	18	B.C. Africa .		E. Sharpe.
301	13	20	Do. • .		A. R. Andrew.
301	$12\frac{3}{4}$	201	N.W. Rhodesia .		R. Campbell Heathcote.
301	141	10	Do		A. de L. Long.
301	$12\frac{3}{4}$	I 5\frac{3}{4}	Do		J. E. R. Oldfield.
30	13	16 1	Do		Capt. R. A. McClymont.
30	$11\frac{1}{2}$	22	Do		Sir Randolph Baker, Bart.
30	${\rm I}2\tfrac{1}{2}$	2 I	Do		Capt. Mackenzie Murray.
30	$14\frac{1}{2}$	$\mathbf{I}2\frac{1}{2}$	S. Rhodesia .		A. Doughty.
30	$13\frac{1}{2}$	18	N.E. Rhodesia .		P. M. Stewart.
30	$12\frac{3}{4}$	$8\frac{1}{2}$	Do		Earl of Kingston.
30	13½	121	Do		A. Dickinson.

Length on front of horn.	Circum- ference.	Tip to Tip.	Locality.	Owner.
30	II $\frac{1}{2}$	I 3½	B.C. Africa .	C. B. C. Storey.
30	14	$17\frac{1}{2}$	Rhodesia .	H. C. da Costa.
30	13	213	N.W. Rhodesia .	G. L. Harrison.

B.—EAST AFRICAN RACE (T. oryx pattersonianus).

				,	_	
Length on front of horn.	Circum- ference.	Tip to Tip.	Locality			Owner.
321	13	16	German East A	Africa		J. R. Rolls Richardson.
315	104	$25\frac{1}{2}$	East Africa			Sir F. J. Jackson.
30	ΙΙ	$13\frac{1}{2}$	Do.			E. B. Horne.
30	12	17‡	Do.			Lady Grizel Hamilton.
29	$12\frac{3}{4}$	16 1	Do.			G. Henry.
29	12	14	Do.			R. L. Scott.
283	13∄	121/2	Do.			G. Blaine.
28	12	173	Do.			Capt. G. F. Phillips.
28	II	$19\frac{1}{2}$	Do.			LieutCol. J. H. Patterson.
27 ³ / ₄	I I 1	$10\frac{1}{2}$	Do.			Gerard Buxton.
273	12	II ½	Do.			Dr. E. D. Anderson.
$27\frac{1}{2}$	${\tt I}{\tt 2}\tfrac{1}{2}$	I 3½	Do.			H. G. Barclay.
$27\frac{1}{2}$	II $\frac{1}{2}$	9	Do.			G. N. Crisford.
$27\frac{1}{2}$	10	$15\frac{3}{4}$	Tana Valley			Major H. De Prée.
$27\frac{1}{4}$	$12\frac{1}{2}$	II $\frac{1}{2}$	East Africa			E. H. Litchfield.
27 ¹ / ₄	II $\frac{1}{2}$	I I $\frac{3}{4}$	Do.	,		L. L. Biddle.
27 ¹ / ₈	I I ½	23	Do.			Capt. V. C. de Crespigny.
27	$13\frac{1}{2}$	$12\frac{1}{2}$	Do.			The late G. G. Longden.
27	II $\frac{1}{2}$	134	Do.			W. Neilson.
26 3	$12\frac{1}{2}$	15	Do.			LieutCol. P. Polovtsoff.
$26\frac{3}{4}$	$10\frac{1}{2}$	I 5\frac{3}{4}	Do.			Capt. L. W. Sadlier-Jackson.
$26\frac{1}{2}$	12	91	N. of Machakos			E. J. Mardon.
$26\frac{1}{2}$	$10\frac{1}{2}$	13	East Africa			Mrs. A. K. Muir.
26½	113	16	Do.			H. S. Keating.
26½	I 2	6 1	Do.			The Master of Belhaven.
26½	$10\frac{1}{2}$	16‡	Do.			Major H. B. Dalgety.
26½	113	81	Do.			J. Hall.

ELAND 329



Malformed Horns of Cow Eland in the Collection of Major W. Anstruther Gray.

The following are female specimens:—

Length on front of horn.	Circum- ference.	Tip to Tip.	Locality.	Owner.
$39\frac{1}{2}$	7	$26\frac{3}{4}$?	Major W. Anstruther Gray.
35 ⁸	$7\frac{1}{2}$	15	Angola	C. W. Sharp.
$33\frac{1}{2}$	9	15 3	N.W. Rhodesia	J. H. Leche.
$32\frac{1}{4}$	63		Chobi Valley	M. C. Greaves-Bagshawe.
$32\frac{1}{4}$	63	5∄	South Africa	Sir Abe Bailey.
32 1 /8	$7\frac{1}{8}$	$8\frac{3}{4}$?	Mr. Justice Hopley.
32	8	20	B.C. Africa	Capt. J. S. Brogden.
301	$7\frac{1}{2}$	132	Do	R. C. Wood.
29 3	8	II ½	Angola	Sir H. E. M. James.
29 ³ / ₄	81/2	19	N.W. Rhodesia	A. Willis.
291	$7\frac{3}{4}$	20	East Africa	F. W. Greswolde-Williams.
291	$8\frac{1}{2}$	21	N.W. Rhodesia	R. Beaumont.

Length on front of horn.	Circum- ference.	Tip to Tip.	Locality.			Owner.				
283	7‡	$13\frac{1}{2}$	East Africa			Capt. T. H. Rivers Bulkeley.				
271	$7\frac{3}{4}$	181	Do.			J. Leslie.				
271	71	143	Do.			Capt. C. Brook.				
	OWNER'S MEASUREMENTS.									
41	$7\frac{7}{8}$	13	German East	Africa	١.	Major von Tiedemann.				
36	$7\frac{1}{2}$	$2I_{\frac{1}{4}}^{\frac{1}{4}}$?			P. C. Keytel.				
35 i e	8,9	$20\tfrac{1}{16}$	Zomba Plain	B.C.	Α.	Charterhouse Museum (Dr. Percy Rendall).				

C.—MASHONA RACE (T. oryx selousi).

Length on front of horn.	Length on Circum- ont of horn. Circum- ference. Tip to Tip.		Locality.	Owner.	
♀ 32	$9\frac{1}{2}$	$20\frac{1}{2}$	Mashonaland .		F. C. Selous.



Head of Lord Derby's Eland, from Senegambia.

LORD DERBY'S ELAND (Taurotragus derbianus).

In this species the horns are larger than in the typical eland, the ears are broader and truncated at the tips, and the dewlap commences at the chin, instead of on the throat. Sub-adult bulls have the fore-head chestnut, but a chocolate frontal tuft is developed later; there is an imperfect white chevron below the eyes; the lower part of the face is dark brown; a dark collar bordered below with white occupies the sides of the neck; the back of the neck carries a dark brown mane. The general colour of the hair is chestnut or rufous in the typical race, but paler in the Sudani race; the number of white body-stripes being 14 or 15 in the former and about 10 in the latter. Dark knee-bands are present; and the pasterns are black behind.

Distribution. — The open districts of the interior of Senegambia, Gambia, and Portuguese Guinea, and thence to the Bahr-el-Ghazal, Lado, and the Upper Congo.

A.—SENEGAMBIAN RACE (T. derbianus typicus).

Length on front of horn.	Circum- ference.	Tip to Tip.	Locality.	Owner.
$42\frac{1}{2}$	13½	44 ³ / _±	French Congo	Hon. Walter Rothschild.
42	14	$22\frac{1}{2}$	Do	American National Collection.
36½	$15\frac{1}{2}$	182	Senegambia	Major J. C. B. Statham.
36½	14	$27\frac{1}{2}$	Gambia .	Hon. Walter Rothschild.
36	I 3½	23 ¹ / ₄	Do	G. Fenwick-Owen.
♀ 34½		$25\frac{1}{2}$	Portuguese Guinea .	Major P. H. G. Powell-Cotton.
341	14 ¹ / ₈	$22\frac{3}{4}$	Gambia	Sir Edmund G. Loder, Bart.
34	$12\frac{3}{4}$		3	J. Carr Saunders.
331	14	$25\frac{3}{4}$	French Guinea.	W. C. Rose.
33	13 ³	26	Gambia	C. Sharland.
322	I 2 ½	29 ⁷ / ₅	Do	British Museum (13th Earl of Derby).
$32\frac{1}{2}$	91	123	?	Sir Edmund G. Loder, Bart.
$32\frac{1}{4}$	13	231	Gambia	H.R.H. the Duc d'Orléans.
313	12	20	Portuguese Guinea	Major P. H. G. Powell-Cotton.
311	$12\frac{1}{2}$	151	Gambia	H. C. Goddard.
307/8	$10\frac{3}{4}$	$26\frac{3}{4}$?	British Museum (F. W. Reade).
9 29½	101	13	Portuguese Guinea	Vicomte de Thienne.
♀ 25	9	10_4^3	Gambia	H. C. Goddard.
♀ 24‡	9	61/4	Do	British Museum (F. W. Reade).

B.—SUDANI RACE (T. derbianus gigas).

ength on t of horn.	Circum- ference.	Tip to Tip.	Locality.	Owner.
41	131	25 ³ £	Bahr-el-Ghazal	Sir Robert Harvey, Bart.
401	I 3½	$24\frac{3}{4}$	Do	Capt. R. C. Greenwood.
39 ³ / ₄	141	2 9 ³	Do	Hon. Walter Rothschild.
393	141/2	27	Do	Capt. J. L. F. Tweedie.
39 ¹ / ₂	121	301	Do	G. Blaine.
39 1	13		Near Lado, White Nile	Gen. Sir F. R. Wingate.
39	142	394	Near Wau, Bahr-el- Ghazal.	British Museum.



Skull and Horns of Sudani race of Lord Derby's Eland, in the Collection of Sir Abe Bailey.

Length on front of horn.	Circum- ference.	Tip to Tip.	Locality.	Owner.
39	14	291	Bahr el-Ghazal .	Capt. R. J. Collins.
$38\frac{1}{2}$	134	192	Do	Sir Abe Bailey.
38½	154	33	Tembura .	Capt. E. S. Stephenson.
38‡	I I $\frac{3}{4}$	$22\frac{3}{4}$	Bahr-el-Ghazal .	Major C. A. Wilding.
38	$14\frac{1}{2}$	25‡	Do	Col. A. Colville.
37 4 37	14	31½	Do	A. F. Williams.
$37\frac{1}{2}$	13 3	28 ³	Do	Major A. J. B. Percival.
$37\frac{1}{2}$	133	35	Do	Major R. B. Airey.
37‡	$I_{4\frac{1}{2}}$	$23\frac{3}{4}$	Yei Valley .	Major P. M. Dove.
$36\frac{1}{2}$	14	$29\frac{1}{2}$	Bahr-el-Ghazal .	Capt. G. F. Pridham.
$36\frac{1}{2}$	131	$33\frac{1}{2}$	Do	Sir Edmund G. Loder, Bart.
36‡	13		Do.	Capt. J. G. A. Massy.
$35\frac{1}{2}$	14	34	Do	Major R. B. Airey.
34 1	I 3½	191	Do	Baron F. Nicolics.
♀ 34	$9\frac{1}{2}$	291	Do	Capt. H. R. Headlam.
♀ 33∄	104	163	Do	Hon. Walter Rothschild.

Measurements of an old bull, shot near Wau, Bahr-el-Ghazal, by Capt. R. J. Collins (horns $39\frac{3}{4}$ inches):—

Height just behind centre of	sho	ulder		5	feet	8	inches
Nose to base of tail .				9	"	0	>>
Girth 6 inches from fore-leg				7	,,	$I\frac{1}{2}$. ,,
Length of tail				2	"	3	31
Length of body .					"		
Round centre of neck .				4	"	$2\frac{1}{2}$,,

C.—CONGO RACE (T. derbianus congolanicus).

Length on front of horn.	Circum- ference.	Tip to Tip.	Locality.	Owner.
291	11	193	Stanley Falls .	Sir Edmund G. Loder, Bart.

CHAMOIS



Frontlet and Horns of Count Arpad Teleki's Chamois.

The CHAMOIS (Rupicapra tragus, or R. rupicapra).

The chamois does not belong to the antelopes properly so-called, but represents a group connecting the former to a considerable extent with the true goats, one member of the group being indeed commonly designated the Rocky Mountain goat. Most of these ruminants are more or less goat-like in general appearance, having narrow goat-like molar teeth and short or moderately long tails. Their horns, which are black in colour, are, however, quite distinct from those of the goats, being for the most part cylindrical in section, and curving backwards. From the other members of the group the chamois is at once distinguished by the sharp hook formed by the backward curvature of the horns, which rise almost vertically from the head. The colouring is too well known to need description, although attention may be directed to the dark streak running from the eye to the side of the muzzle. Height at shoulder reaching 32 inches; weight of male, generally about 65 lbs. (although 125 lbs. has been recorded in one case), that of female from 45 to 50 lbs.

Distribution.—The mountains of Central and Southern Europe, from the Pyrenees to the Apennines and Caucasus, and those of Asia Minor. Chamois vary in colour according to season, but it seems that some races are darker than others. Several local races are recognised, such as the true chamois, or gems, of the Alps; the smaller and lighter coloured izard (R. t. pyrenaica) of the Pyrenees, and the darker R. t. parva of the Cantabrian Mountains of Spain. The Apennine R. t. ornata has the light throat-patch larger, and the upper side also light; the Carpathian race, not yet named, is very dark, old bucks being nearly black above. The Caucasian R. t. caucasica is distinguished by its relatively short and stout horns and certain features of the bones of the nasal region of the skull; while the light-coloured Trebizond R. t. asiatica is likewise distinguished by horn and skull characters. A great feature from an Austrian sportsman's point of view is the length of the beard, which in old chamois may measure over eleven inches in length.

Length on front curve.	Circum- ference.	Tip to Tip.	Spread.	Locality.	Owner.
♀ 12§	3‡	$5\frac{7}{8}$		Carinthia	J. D. Heaton Armstrong. (See illustration, p. 339.)
I 2 ½	$3\frac{1}{2}$	5 3	61/8	Branu, Carpathians	C. G. Danford.
I I 5	48	7		?	Hon. Walter Rothschild.
113	35	$7\frac{5}{8}$		S. Austria	J. Hamilton Leigh.
113	35	$5\overline{\tau}^7 \overline{\varepsilon}$		Do	R. K. Cross.
I 1 ½	$3\frac{1}{2}$	$6\frac{1}{2}$?	Col. Howard.
II 1 8	4	$3\frac{3}{4}$		Austria	J. R. Luchsinger.
II	$3\frac{1}{2}$	41 ³ 6		Transylvania	F. C. Selous.
II	$3\frac{3}{4}$	$7\frac{1}{2}$		Do	St. George Littledale.
11	38	$7\frac{1}{2}$		Austria	J. R. Luchsinger.
103	3½	4 ₁ ³ 0		Tyrol	Sir Edmund G. Loder, Bart.
103	3	$4\frac{1}{4}$		Austria	M. D. V. Holt.
9 105	3	54		Do	Hon. Walter Rothschild.
108	38	$5\frac{1}{8}$?	Rev. J. F. Glossop.
$10\frac{1}{2}$	318			Do	L. R. Rate.
♀ 10½	34	$6\frac{3}{4}$		S. Austria	J. Hamilton Leigh.
10‡	$3\frac{1}{2}$	5‡		?	E. N. Buxton.
101	34	5‡		Austria	Sir Robert Harvey, Bart.
10	$3\frac{1}{2}$	$3\frac{1}{2}$		W. Caucasus	A. F. Broadley-Smith.
$9\frac{7}{5}$	$3\frac{1}{2}$	3		?	Norman Lamont.
978	38	$4\frac{3}{4}$		3	Capt. W. Waring.
$9\frac{3}{4}$	35	2		Carinthia	R. C. Graves Sawle.
9 [‡] 6	24	$6\frac{1}{2}$		Pyrenees.	D. Davies.

Length on front curve.	Circum- ference.	Tip to Tip.	Spread.	Locality.	Owner.
$9\frac{3}{4}$	$3\frac{3}{4}$	3		W. Caucasus	St. George Littledale.
9^{1}_{2}	3	$3\frac{7}{8}$		Gerlos	Hon. M. W. Elphinstone.
$9\frac{1}{2}$	2_{2}^{1}	5		Pyrenees	P. H. Thomas.
9 .	3	$5\frac{1}{4}$		Do	Sir Victor Brooke's Collection.
9	$3\frac{1}{2}$	$2\frac{5}{8}$		Caucasus	Rhys Williams.
83	3	3		Do	Prince E. Demidoff.
			OWNE	ER'S MEASUREME	NTS.
¹ I 2 ³ ₄	4 ¹ / ₈		7 s	Hungary	Baron Donald Schönberg.
$12\frac{1}{4}$				Do	C. G. Danford.
² I 2 ¹ €	43		$7\frac{1}{2}$	Retyezat, Carpathian	ns Count Arpad Teleki. (See illus-
12	4			Hinter Riss	8
12				Tyrol (?)	and Gotha. Count Arco.
12				Carpathians	. Count Zdenko Kinsky.
II $\frac{1}{2}$	34	$3\frac{3}{4}$	4½	Do	Archduke Carl Franz Joseph.
II $\frac{1}{2}$				Retyezat	Count Erbach.
I I $\frac{1}{2}$	3 5	$6\frac{7}{8}$	* * *	Albreis Morteratch,	A. E. Pease.
♀ I I ¼	\	415		Engadine Retyezat	Baron A. Nopcsa.
II116				Do	G. von Kendeffy.
ΙΙ	3₹	$5\frac{1}{2}$?	Count John of Meran.
$10\frac{15}{16}$	35	4		Tyrol	. Sir Edmund G. Loder, Bart.
I08	34	$6\frac{7}{8}$	***	Bulgaria	Dr. Albert von Stephani.
$10\frac{3}{4}$	3 3	$7\frac{1}{2}$		Herzegovina .	. Eberhard Hollinek.
5 10 [₹]	•••	54		Retyezat	C. G. Danford.
9 105			7	S. Austria	R. K. Cross.
108	$3\frac{7}{8}$	$4\frac{1}{2}$		Styria	Dr. H. Sonnenthal.
$10\frac{1}{2}$	$3\frac{1}{2}$	58		Austria	H.R.H. the Duke of Braganza.
$10\frac{1}{2}$	2章	5		?	Count John of Meran.
$10\frac{1}{2}$	$3\frac{1}{2}$	4 ³ / ₄		Austria	T. V. Holt.
$10^{-5}_{ m T6}$	38	38		S. Austria	J. Kenneth Foster.
101	3	53		Do	Count Palffy.
\$ 10₹	•••			Grindelwald	F. A. Labouchere.
10	$3\frac{1}{2}$	$4\frac{1}{2}$	$5\frac{1}{2}$	S. Austria	W. Winans.
81	3	$3\frac{3}{4}$		N. Spain	Abel Chapman.
	1 13 W	hen killed.		2 123½ lbs. not clean, a	nd horns now measure 113.

Z



The best Chamois Heads shot by His Majesty the Emperor of Austria,

The following are the best specimens in the collection of His Imperial Majesty the Emperor of Austria, who between 1849 and 1902 shot 1991 chamois:—

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.	Date.	
$9-11\frac{1}{4}$	38	$6\frac{5}{8}$	Salzkammergut		July 26, 1889.
-11	38	54	Do.		December 10, 1859.
$-10\frac{3}{4}$	34	$4\frac{7}{8}$	Do.		,, 28, 1868.
$-10\frac{1}{2}$	$3\frac{7}{8}$	$4\frac{7}{8}$	Do.		July 31, 1885.
-I0 ³	38	5 ls	Do.		November 10, 1870.
-108	3 7 8	4 ⁷ / ₈	Do.		July 31, 1885.
9 −9 5	$2\frac{3}{4}$	$7\frac{1}{2}$	Do.		,, 10, 1886.

- Owner's measurements.



Frontlet and Horns of Chamois, shot by Mr. J. D. Heaton Armstrong.



Head of Himalayan Goral.

HIMALAYAN and BURMESE GORALS (Nemorhædus goral, etc.).

Goral, W. Himalaya. Pÿ, Par, Rai, Rom, Kashmiri. Sáhari, Sarr, Sutlej Tribes.

The gorals are near relatives of the serows, from which they may be distinguished by their generally smaller size, shorter horns, and absence of face-glands, as well as by certain differences in the conformation of the skull. The horns curve regularly backwards, are conical in form, and marked by small irregular ridges for the greater part of their length. The hair is somewhat rough and shaggy, and the tail considerably longer than in the chamois. Height at shoulder, from 26 to 28 inches; weight, from 58 to 63 lbs.

The following species occur in the Indo-Burmese countries:—

Nemorhædus hodgsoni.—Tail short. Colour brown, with a white patch on the throat and chin, a black dorsal stripe and tail, and a black stripe down the front of each leg and over knee. Horns comparatively straight, and not heavily ringed. Eastern Himalaya.

Nemorhædus goral.—Tail short. Colour yellowish grey fawn suffused with blackish, throat-patch white, little or no distinct dorsal stripe, a dark streak on muzzle; base of tail and knees blackish, the rest of the legs being fawn. Horns more curved and more heavily ringed than in the last. Western and part of Eastern Himalaya.

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Nemorhædus griseus.—Tail larger. Colour brownish grey fawn suffused with brown; throat-patch small and yellow; no stripe on muzzle or back; tail and back of legs dark brown, rest of legs rufous fawn. Horns very small. Sze-chuan to Upper Burma.

Length on front curve.	Girth.	Tip to Tip.	Local	lity.			Owner.
85	3 ³	$\mathbf{I}\frac{1}{2}$	Kishtwar				P. F. Hadow.
81	3 \frac{7}{8}	134	Garhwal				Capt. D. L. R. Lorimer.
8	3 ³ / ₄	318	Chamba				Major C. Levita.
7 7	3 3	3	Do.				Capt. R. A. C. Murray.
7 ³	3 3	•••	Near Musur	i			Col. C. T. McM. Kavanagh.
7 §	4 ¹ / ₈	$2\frac{1}{4}$?			D. Lawrie.
7 §	3₹	$3\frac{1}{2}$?			British Museum (Hume Collection).
$7\frac{1}{2}$	3	$2\frac{3}{4}$	Near Musur	i			British Museum (Hume Collection).
$7\frac{1}{2}$	$3\frac{3}{4}$	3	Do.				R. Stephens.
$7\frac{1}{2}$	33	34		?			Capt. P. H. H. Bailey.
7 7 18	$3\frac{1}{2}$	2 ³ / ₄	Chamba				Major A. H. Ogilvy Spence.
78	3 ⁷ / ₈	$3\frac{1}{2}$	Kishtwar				P. B. Vander Byl.
7 ³ 8	4	5 1 8	Garhwal				Major L. W. S. Oldham.
7 §	33	35	Jhelam Val	ley,	Kasl	hmir	Major P. H. G. Powell-Cotton.
71	3	3	Chamba				Major F. W. H. Walshe.
$7\frac{1}{4}$	38	2 ¹ / _S	Do.				Capt. F. Pope.
7흥	31/4	$2\frac{1}{2}$	Do.				Sir Edmund G. Loder, Bart.
7 ¹ 8	4	$2\frac{3}{4}$?			Capt. M. E. D. Hepenstat.
		OW	NER'S ME	ASU	JRE	MEI	NTS.
9 ¹ / ₈	$3\frac{3}{4}$	415	Near Musui	ri			H. Simons.
83	33	3	Musuri		٠		V. A. Mackinnon.
$8\frac{1}{2}$	•••		Bissahir				LieutCol. A. E. Ward.
81/8	$3\frac{1}{2}$	•••		?			Col. J. Biddulph.
\$ 8	$2\frac{1}{4}$	4	Garhwal				J. O'Brien.
8			Chamba				Major C. B. Vandeleur.
7 ⁷ 8	3 ³ / ₈	3 = 3 = 5	Do.				D. Cameron.
7 g	4	2 ³ / ₈	Near Musui	ri			Major J. T. C. Murray.
71/2	4	3	Mohand Pa	SS			R.E. Mess, Roorkee.

VARIOUS CHINESE GORALS AND SEROWS.

Gni Lu of Chinese.

Species.	Collected by	Length on front (curve.	Girth.	Tip to Tip.	Locality.	Owner.			
Capricornis miln edwardsi	ne- Abbé A. David	$\begin{array}{cc} 1 & -8\frac{1\cdot 1}{1\cdot 6} \\ -8\frac{5}{1\cdot 6} \end{array}$	$7\frac{1}{2}$ $7\frac{1}{8}$	4 2	Moupin, Sze- chuan	Paris Museum (Type).			
•••		-8			Ichang	Comdr. F. B. Noble, R.N.			
		7 5	3 78	$3\frac{1}{2}$	Shen-si	K. K. Horn.			
Nemorhædus cine	ereus Abbé A. David	$-7\frac{1}{2}$	3 ¹ / ₈	316	Sze-chuan .	Paris Museum (Type).			
		♀7½	3		Nank'ou	W. F. Collins.			
,, caud	atus Abbé A. David	$-6\frac{5}{16}$	3 1 6	3 1 8	North of Pekin	Paris Museum (Type).			
		6‡	4	$3\frac{1}{2}$?	British Museum.			
,, grise	eus . Do.	$-4\frac{3}{4}$	31/8	23	Sze-chuan .	Paris Museum (Type).			
	- Owner's measurements.								

JAPANESE SEROW (Capricornis crispus).

A rather small species of serow with a coat of long grey hair.

Distribution.—The southern islands of Japan; an allied species (C. szwinhoei) inhabiting the island of Formosa.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.				Owner.
-7	4	38	Japan				Sir Edmund G. Loder, Bart.
-61	3 1	34	Do.				Imperial Museum, Vienna.
5‡	31/8	31/8	Do.				British Museum.
44	3	3‡	Do.				E. L. Fletcher.

⁻ Owner's measurements.

SEROW 343



Head of Serow.

The SEROW (Capricornis sumatrensis).

Serow, serowa of Gurhwal and Himalaya.

Ramu-Halj, Sàlàbhir.

Aimu, Kumaon. Jungal, Kangra. Goa, Chamba.

Yamu, Kulu.

Serows are clumsily built ruminants generally larger than gorals, with face-glands and longer horns. The ears are long; the hair is coarse, rather thin, and elongated into a crest from the nape to the withers; the under fur found in the gorals being usually absent. In the typical species the general colour of the upper-parts is normally black or dark grey, with a grizzled appearance, owing to the whitish bases of the hairs; the under-parts, shoulders, and thighs being rusty red. There is, however, great local variation; some races being wholly or mainly rufous and others black, while the lower portion of the legs may be white or rufous or a mixture of both. The form of the skull also differs. Height at shoulder, from about 34 to 38 inches. Weight, 120 to 190 lbs.

Distribution.—Typically from Sumatra, but ranging from Yun-nan and Sze-chuan to the Eastern Himalaya, and occurring throughout the elevated tracts of Assam, Burma, Siam, and the Malay Peninsula. In the Sumatran race the limbs are wholly rusty; in the Darjiling N. s. jamrachi the lower portions of the legs are mingled rufous and white, while in the Nepalese C. s. bubalinus they are white. The Chamba C. s. rodoni is dark, with under-fur; but in the Kashmiri C. s. humei the head is rufous brown, and in the Arakan C. s. rubidus bright rufous. The Malay C. s. swettenhami and C. s. robinsoni are almost wholly black, but the Sze-chuan and Burmese C. s. milne-edwardsi is black with rufous shanks. In rubidus the nasal bones are very short; in swettenhami they are longer and narrower, and the profile of the skull is more vaulted.

A.—EASTERN RACES.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality			Owner.
II $\frac{1}{2}$	54	34	Mishmi Hills			R. Sinclair.
$10\frac{1.5}{1.6}$	5	I 7/8	Burma .			O. F. Wheeler-Cuffe.
IO^1_2	6	5	Do			A. L. Bacon.
95	6	$2\frac{3}{4}$	Chin Hills.			Capt. F. W. A. Wells.
98	$4\frac{1}{2}$	4 3/4	Burma .			British Museum (Hume Collection).
9	5	2	Sumatra .			Do.
♀9	$4\frac{1}{2}$		Upper Burma			H. Shaw Dunn.
878	5‡		?			H. E. Stephens.
83	$5\frac{1}{2}$	43	Muleyit .			British Museum (Hume Collection).
83	5‡	$3\frac{1}{2}$	Upper Burma			H. O. Whittall.
83	5	31	Do.			Capt. L. Trevor Goff.
		OW	NER'S MEAS	UR	EME	NTS.
$10\frac{1}{2}$	5 ½	5	Ta-chi-lu, Chir	na		M. Mitchell.
107	5‡	***	Upper Burma			H. Shaw Dunn.
$9\frac{1}{2}$	5	5½	Arakan Hills			British Museum (Hume Collection).
94	5	41/2	Burma .			H. L. P. Walsh.
9	5 ½	$5\frac{1}{2}$	Do			Bombay Natural History Society.
9	5	5	Do			LieutCol. G. H. Evans.
819	$5\frac{1}{2}$	41	Manipur .			LieutCol. H. S. Wood.
83	43	2 1/8	Perak .			Perak Museum.

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B.—WESTERN RACES.

Length on front curve.	Circum- ference.	Tip to Tip.	L	ocality	7.		Owner.		
$12\frac{1}{4}$	$6\frac{1}{2}$	$2\frac{3}{4}$	Garhwal				British Museum (Hume Collection).		
101	5	$3\frac{1}{2}$	Chamba				H.H. the Raja of Chamba.		
\$ 10₹	5 3 4	3 4	Kumaon				LieutGen. Sir R. Hart.		
10	4 5	3 ³ / ₄	Garhwal				Major J. C. B. Statham.		
10	6	$\frac{7}{8}$		5			C. B. Atkinson.		
93	5 g	6	Kashmir				British Museum (R. Lydekker).		
95	51	$\frac{3}{4}$?			Col. C. M. Haggard.		
$9\frac{1}{2}$	$5\frac{1}{2}$	4		?			K. C. Zarzhetsky.		
9^{1}_{2}	5 §	$4\frac{3}{4}$	Kashmir				St. George Littledale.		
9^{1}_{2}	$4\frac{7}{8}$	3 1	Nepal				British Museum (the late B. H. Hodgson).		
9^{1}_{2}	58	33		3			Sir Edmund G. Loder, Bart.		
912	5‡	1	Kashmir				Bombay Natural History Society.		
98	5136	$3\frac{7}{8}$	Chamba				LieutCol. C. W. Tribe.		
94	5	$3\frac{1}{2}$	Do.				Capt. H. Meynell.		
$9\frac{1}{4}$	$4\frac{1}{2}$	3	Do.				Major the Hon. A. Hamilton-Russell.		
9‡	$4\frac{3}{4}$	41	Do.				H. L. P. Walsh.		
94	51		Do.				Capt. L. R. Hogge.		
9‡	54	3	Do.				Capt. W. B. Baker.		
		OW	NER'S M	EAS	URE	ME	NTS.		
I 2 3/4	6	•••		3			E. C. Stuart Baker.		
12		•••	Himalaya			٠	LieutCol. A. E. Ward.		
108	5	4		3			V. A. Mackinnon.		
102	5 5	$3\frac{1}{2}$	Garhwal		٠	•	A. P. Davis.		
.5 8§	5 ਵੇ	4	Sind Valle	ey, K	ashmi	r.	Major P. H. G. Powell-Cotton.		



White-Maned Serow. Shot by Mr. G. Fenwick-Owen.

WHITE-MANED SEROW (Capricornis argyrochætes).

A large species of a mingled rufous grey colour, with more or less white in the mane and the thighs, and whole of the limbs rufous. Weight, about 250 lbs. (G. Fenwick-Owen).

Distribution.—Sze-chuan, Kan-su, and Shen-si.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.	Owner.
919	54	4	Sze-chuan	British Museum (the late J. W. Brooke).
$-9\frac{1}{2}$	7½	4	Do	Paris Museum.
$7\frac{7}{8}$	$4\frac{7}{8}$	47/8	W. Kan-su	G. Fenwick-Owen.
♀ 7∄	$4\frac{1}{4}$	2 §	Kan-su, Tibet Border	K. K. Horn.

⁻ Owner's measurements.

TAKIN 347



Kan-su Takin. Shot by Mr. G. Fenwick-Owen.

The TAKIN (Budorcas taxicolor).

Probably also akin to the musk-ox, this ruminant is a relative of the serows. It is heavily built, with stout limbs, large lateral hoofs, a short tail, a convex profile, and a partially hairy muzzle. The horns, which are large, massive, and bent somewhat after the fashion of those of the gnu, curve at first outwards and somewhat downwards, and then bend abruptly upwards about the middle of their length. Height at shoulder, about $3\frac{1}{2}$ feet. Horns are present in both sexes, as in the serows and gorals, those of females being smaller than those of males. The general colour varies from greyish brown with a light saddle, and passing into blackish on the head, limbs, and underparts, with a continuous dark dorsal streak, to deep rufous or black.

Distribution.—Typically the Mishmi Hills on the northern frontier of Assam, but represented by the small-horned B. t. whytei in Bhutan.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.			Owner.
231	$12\frac{1}{2}$	$\mathbf{IO}_{\frac{3}{4}}$	Mishmi Hills			Capt. H. C. Nicolay.
$22\frac{1}{2}$	I I 1 1	12	Do.			Hon. Walter Rothschild.
22 ³ / ₈	105	$14\frac{3}{4}$	Do.			British Museum.
$22\frac{3}{8}$	11	12	Do.			Duke of Bedford.
$22\frac{1}{4}$	IO^1_2	10 3	?			Major C. P. Gunter.
211	I I 1	$\mathbf{IO}_{\underline{2}}^{\mathbf{I}}$	Abor Country			Sir Edmund G. Loder, Bart.
21	I 2	$13\frac{1}{2}$	Mishmi Hills			A. J. Walter.
$20\frac{7}{8}$	11 3	I I $\frac{7}{8}$	Do.			British Museum (Hume Col-
20 ³ / _±	II 🖁	${\tt I2}\tfrac{1}{2}$	Do.		٠	lection). British Museum (Hume Collection).
$20\frac{1}{4}$	I I ½	10	S.E. Tibet .			Capt. F. M. Bailey.
193	$I2\frac{1}{4}$	$12\frac{1}{2}$	Tibet (?) .			Hon. Walter Rothschild.
9 15	9	$8\frac{1}{2}$	Do		٠	Lord Osborne Beauclerk.
		70	WNER'S MEAS	URE:	ME	NTS.
25	13	I I ½	Mishmi Hills	٠		F. J. Needham.
241		•••	Do.			Col. J. Biddulph.
241	$12\frac{3}{4}$	$12\frac{3}{4}$	Do.			Indian Museum.
22	123	121	Do.			Bombay Natural History Society.
211	II	$7\frac{1}{2}$	Do.			R.E. Mess, Roorkee.

SZE-CHUAN and KAN-SU TAKIN (Budorcas tibetana and B. bedfordi).

Typically the colour of the fore-quarters in the Sze-chuan race is bright orange, passing into greyish behind and beneath, with the ears and lower part of the face black, and the dorsal stripe stopping at withers. In a second phase the orange area is replaced by dirty white and pale grey. Horns relatively long and slender. In Shen-si and part of Kan-su this race is replaced by *B. bedfordi*, which is wholly orange, or orange-brown.

Distribution.—The first race inhabits Sze-chuan, Yun-nan, Tibet, and part of Kan-su.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.	Owner.
22 ³ / ₄	$10\frac{1}{2}$	$9\frac{1}{2}$	Tsinling Mountains, Shen-si.	G. Fenwick-Owen.
$20\frac{1}{2}$	$II\frac{1}{2}$	113	Kan-su, China .	Hon. Walter Rothschild.
$20\frac{1}{2}$	121	I I 3	S. Shen-si	British Museum.
201	113	83	Tsinling Mountains, Shen-si	H. F. Wallace.
-198	I I ½	13 8	Sze-chuan	Paris Museum (Abbé A. David).
$-18\frac{1}{2}$	12	16	Nr. Ta-chi-lu .	M. Mitchell.
174	$I2_{2}^{J}$	114	Shen-si	K. K. Horn.

⁻ Owner's measurements.



Head of Rocky Mountain Goat.

The ROCKY MOUNTAIN GOAT (Oreamnus americanus).

(Also known as Haploceros montanus.)

This is one of the very few mammals that are permanently white or whitish at all seasons; and although commonly termed a goat, really belongs to the same group as the serows, which it closely resembles in the form and colour of the horns. In winter the hair is very long and pure white in colour; along the back it is erect, and much elongated on the withers and haunches, so as to give to the animal the appearance of possessing a pair of humps. The summer coat is comparatively short, and has a yellowish tinge. There is a black gland, sometimes as large as half an orange, at the back of the base of each horn. Height at shoulder, from 3 feet to 3 feet 9 inches; weight, about 300 lbs. Four local races have been named. Of these, the typical Rocky Mountain race is of medium size, with a broad skull; the British Columbian O. a. columbæ is larger, with a narrow skull; while the Montana O. a. missoulæ, which also has a narrow skull, is small. The Alaskan O. a. kennedvi differs by its slender and widely divergent horns.

Distribution.—North America; throughout the Rocky Mountains, from the Salmon River, Idaho, nearly as far north as Cook's Inlet, Alaska.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.	Owner.	
$10\frac{5}{8}$	6	$7\frac{1}{2}$	Cassiar	Major J. F. Church.	
108	61	$7\frac{1}{2}$	Do	K. K. Horn.	
101	6	63	Montana	D. Davies.	
101	51	$5\frac{1}{2}$	British Columbia	R. Rankin.	
101	6	7	Do.	H. B. Tate.	
107	6		Cassiar	R. Beaumont.	
101	$5\frac{3}{4}$	6	Do	C. H. Young.	
$10\frac{1}{8}$	5	61/8	?	E. N. Buxton.	
IOS	5 3	7 1 8	British Columbia	Hon. M. Egerton.	
10	58	58	Do.	Rev. Lord Victor Seymo	our.
10	54	$7\frac{1}{4}$	Cassiar	M. W. Ward.	
93	$5\frac{1}{4}$	61	Do	W. A. Conduitt.	
$9\frac{4}{3}$	$4\frac{1}{2}$	$7\frac{1}{2}$;	S. H. Christy.	
$9\frac{3}{4}$	6	63/4	Cassiar	H. C. Wilson.	
93	4 ³ / ₈	6	Do	A. H. Goodall.	
95	6	63	Do	J. S. Shepherd.	
95	51	5½	British Columbia	G. C. Whitaker.	
9\$	$4\frac{1}{2}$	7	Do.	T. A. Henderson.	
9§	$5\frac{1}{4}$	$6\frac{1}{8}$	Cassiar	Sir Edmund G. Loder,	Bart.
$9\frac{1}{2}$	5½	5	5	F. Edelmann.	
$9\frac{1}{2}$	44	6≩	British Columbia	P. N. Graham.	
$9\frac{1}{2}$	43	83	Do.	R. M. Spence.	
$9\frac{1}{2}$	51/2	61	Alaska	St. George Littledale.	
$9\frac{1}{2}$	$4\frac{1}{2}$	•••	North America.	J. D. Cobbold.	
$9\frac{1}{3}$	$5\frac{1}{4}$	68	East Kutenay, B.C.	A. E. Butter.	
$9\frac{1}{2}$	6	5	British Columbia	W. Neilson.	
$9\frac{1}{2}$	54	54	Do.	H. F. Wallace.	
94	$5\frac{1}{2}$	6	Do.	P. K. Glazebrook.	
		OW	NER'S MEASUREM	ENTS.	
121	51	II $\frac{1}{2}$	British Columbia	Wilson Potter.	
$11\frac{1}{2}$	•••	• • •	Do	Clive Phillipps-Wolley.	
9 II ¹ ₂	44	61	Montana	G. L. Harrison.	
$10\frac{7}{8}$	7		Cassiar	Col. Max C. Fleischman	n.
108			?	S. E. White.	
$10\frac{1}{2}$	5‡	• • •	Montana	Walter James.	
10,3		4 7 8	British Columbia	Madison Grant.	
\$ 10 ⁸	$4\frac{3}{4}$		Do.	Capt. A. Egerton.	

10 6 $6\frac{1}{2}$ Idaho . . R. Edmunds.



Head of Greenland Musk-Ox.

The MUSK-OX (Ovibos moschatus).

In spite of its name, this Arctic ruminant has no near affinity with the members of the ox tribe, the cheek-teeth being more like those of the sheep and goats, the muzzle, except for a small strip between the nostrils, hairy, and the tail reduced to a mere stump concealed among the long hair of the hind-quarters. On the other hand, the resemblance to the sheep is by no means close, the horns, which in old males nearly meet in the middle line of the forehead, being of a totally different form and structure, and the skull likewise very distinct. Probably the genus is more or less nearly related to the serows and takins. In the males the horns are much flattened and expanded at the bases, after which they are bent suddenly down behind the eyes, to curve upwards again at the tips. In the females they are much smaller, less expanded, and not approximated at their bases. In both sexes their texture is coarse and fibrous, and the colour yellow. The long coat of dark brown hair depending from the back and sides like a mantle affords an adequate protection against the rigors of an Arctic winter; and the broad spreading hoofs, with hair on their under surface, give a firm foothold on snow and ice. Several races are known, including the typical

Canadian and the Greenland *O. moschatus wardi*. The latter is characterised by the presence of a certain amount of white on the forehead and the smaller expansion of the horns. Height at shoulder, about 4 feet. Weight of a bull (piecemeal), 579 lbs. (the late D. T. Hanbury).

Distribution.—Arctic America, approximately north and east of a line drawn from the mouth of the Mackenzie River to Fort Churchill on Hudson Bay, Greenland, and Grinnell-land; approximate southern limit, lat. 60° N. About a century ago musk-oxen also inhabited the districts west of the Mackenzie, including Alaska.

A.—CANADIAN RACE (O. moschatus typicus).

Length on outside curve.	Breadth of palm.	Tip to Tip.	Locality.		Owner.
27 ³	10	$27\frac{1}{2}$	Barren Grounds		The late David T. Hanbury.
$27\frac{1}{2}$	10	$23\frac{1}{2}$	Do.		H. Darrell.
271	$12\frac{1}{2}$	27	Do.		Earl of Lonsdale.
$26\frac{7}{8}$	ΙΙ	27	Do.		American National Collection
2 6 ³ / ₄	128		Arctic America		(Warburton Pike). British Museum (J. Rae).
24 ³ / ₄	II	$25\frac{1}{2}$	Barren Grounds		Warburton Pike.
241	$7\frac{1}{2}$	19	Do.		J. Talbot Clifton.
241	$10\frac{1}{2}$	26	Do_{e}		Hon. Walter Rothschild.
24	9₹	23½	Arctic America		Sir Edmund G. Loder, Bart.
231	6	22 3 /4	Do.		A. Barclay Walker.
23	10	$23\frac{1}{2}$	Do.		His Majesty the King.
23	7	$2I\frac{1}{2}$	Do.		Royal Scottish Museum.

B.—GREENLAND RACE (O. moschatus wardi).

Length on outside curve.	Breadth of palm.	Tip to Tip.	Lo	cality.			Owner.		
$24\frac{3}{4}$	81	$22\frac{1}{2}$	Greenland				British Museum (the late Rowland Ward).		
$924\frac{1}{2}$	$7\frac{1}{4}$	27	Do.				Do.		
23	7	$23\frac{1}{2}$	Do.				H.R.H. the Duc d'Orléans.		
		OW.	NER'S MEA	ASUR	REM.	ENT	S.		
33	121	24½	Barren Grou Northern				N. J. Dinnen.		
301	133	301		?	ıa		J. C. Phillips.		
29	ΙΙ	28	Greenland				Dr. M. E. Johnstone.		
283	132	23 ³ / ₄		?			G. L. Harrison.		
27 2	113	23	Barren Grou	nds			Caspar Whitney.		
271	108	$27\frac{1}{2}$	Do.				Imperial Museum, Vienna.		
♀ 21 ½	43	20 5	Arctic Amer	ica			Do.		

TAHR



Head of Tahr.

The TAHR (Hemitragus jemlaicus).

The tahr and its relatives are the first representatives of that great group of ruminants which includes the true goats and sheep. In all these animals horns are, as a rule, present in both sexes, and are generally more or less distinctly angulated; while the cheek-teeth have tall and narrow crowns like those of the serows, which the tahr serve to connect with the true goats. From the latter tahr are readily distinguished by the small size of their horns, which exceed but little in length the head, as well as by the absence of a beard on the chin of The typical tahr is easily recognised by the great the males. length of the hair of the body, which, although in museum specimens generally combed straight, is very shaggy in nature; and likewise by the form of the horns, which have a knotted sharp keel in front. Height at shoulder, from 36 to 40 inches; weight, about 200 lbs. Mr. Wilson, "Mountaineer," had a pair of horns with a length of $16\frac{1}{9}$ and girth 10½ inches, as measured by Mr. A. O. Hume.

Distribution.—The Himalaya, from Bhutan to Kashmir.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.		Owner.
15	94	54	Chamba		. Col. C. M. Haggard.
$14\frac{9}{16}$	83	•••	Do		. Major J. S. Rivett-Carnac.
$14\frac{1}{2}$	834		Do		. Earl of Altamont.
141	9	$4\frac{3}{4}$	Kishtwar		. Capt. W. F. Corbett.
141	$8\frac{7}{8}$	$4\frac{3}{8}$?		LieutCol. A. Cadell.
148	878	65	Kumaon		. British Museum (Hume Collection).
14	9	6	Chamba		. H.H. the Raja of Chamba.
14	9	$6\frac{5}{8}$	Do		. Major R. St. J. Gillespie.
14	8 1 /8	5 5	?		R. Heber-Percy.
14	834	7	3		C. V. Stockwell.
14	9	$3\frac{1}{4}$	Padir		. P. F. Hadow.
13 7	9	83	Chamba		. Hugo de Burgh.
134	$8\frac{3}{4}$	$7\frac{1}{4}$	Do		. P. Radclyffe.
133	9	111	?		British Museum (Hume Collection).
134	81	$7\frac{3}{4}$	5		I. Morse.
13 5	$9\frac{1}{2}$	$6\frac{3}{4}$?		G. M. Ram.
$13\frac{1}{2}$	$8\frac{1}{2}$	$7\frac{1}{2}$	Kashmir		. J. H. Phelps
$13\frac{1}{2}$	$8\frac{1}{2}$	$7\frac{1}{4}$	Chamba		. Col. H. D. Olivier.
13½	9	63	Kishtwar		. P. B. Vander Byl.
$13\frac{1}{2}$	$9\frac{1}{2}$	61	;		R. C. Watson.
$13\tfrac{1}{2}$	9	$7\frac{1}{2}$?		Sir H. E. M. James.
133	9	878	Garhwal		. Capt. A. W. Robertson-Glasgow.
138	9 ¹ / ₈	543	?		Hon. Walter Rothschild.
			OWNER'S ME	ASUI	REMENTS.
$15\frac{1}{2}$	81	8^{3}_{4}	Garhwal		. V. A. Mackinnon.
141	834	5	Chamba	٠	. Major J. T. C. Murray.
148	$9\frac{1}{4}$	$7\frac{1}{2}$	Garhwal		. Mess of the 3rd Gurka Rifles.
$14\frac{1}{2}$	$9\frac{1}{2}$	$7\frac{1}{2}$	Chamba		. R.E. Mess, Roorkee.

The ARABIAN TAHR (Hemitragus jayakeri).

A much smaller and rather shorter-haired species than the last, of a generally tawny-brown colour, with relatively longer and more slender horns, which are less boldly knotted on the front edge. Height at shoulder, about $24\frac{1}{2}$ inches.

This species, of which the type specimen is in the British Museum, was first obtained by the late Col. Jayaker, in honour of whom it was named by Mr. O. Thomas in 1894.

Distribution.—Jebel Taw, and probably some of the other ranges of Oman, South-East Arabia.

Length on front curve.	Circum- ference.	Locality.	Owner.
−I I §		Oman Mountains	. The late LieutCol. A. S. G. Jayaker.
-II ¹ / ₂	5 1 3	?	Bombay Natural History Society.

⁻ Owner's measurements.



Head of Nilgiri Tahr.

The NILGIRI TAHR or "IBEX" (Hemitragus hylocrius).

Although commonly designated by British sportsmen the "Nilgiri ibex," this species (the warriattu of the native shikaris) is really a member of the same genus as the Himalayan tahr. From that species it is at once distinguished by its short hair and the form of the horns; the latter having the outer surface convex instead of flat, and lacking the knotted front keel. The general colour is dark blackish brown, old males developing a light saddle-like patch on the back. Height at shoulder, from 39 to 42 inches in the males and up to 35 inches in the females.

Distribution.—The hill-ranges of Southern India, including the Nilgiris, Anamalais, and the Western Ghats nearly to Cape Comorin; usually at elevations of from 4000 to 6000 feet, but occasionally descending to lower levels. This species was greatly reduced in numbers by constant persecution, but since the herds have been under Government protection, and a special permit is necessary for shooting, there has been a large increase.

Length on front curve.		Tip to Tip.		Locality.		Owner.
164	87	5 5	Nilgiris			British Museum (Hume Collection).
161	81/2	5	Do.			Col. R. Hoare.
$16\frac{1}{2}$	8‡	6	Do.			S. G. Bird.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.			Owner.
15 8	7 ³	5 ³	Nilgiris			J. H. Whitehouse.
I 5½	85	$7\frac{7}{8}$	Do			Sir Edmund G. Loder, Bart.
158€	83/4	63	Do			Martyn Kennard.
158	81	6	Do			St. George Littledale.
154	7 3	$5\frac{3}{4}$	Do			G. L. Harrison.
15	81	$5\frac{1}{8}$	Do			The late Sir H. D. Tichborne, Bart.
143	$8\frac{1}{2}$	5 \$	Do			Capt. C. S. Timins.
144	81	$7\frac{1}{4}$	Anamalai Hills			M. Loam.
142	83	61	Nilgiris			British Museum.
$14\frac{1}{2}$	85	5 ± 1	Do			Sir Victor Brooke's Collection.
148	8	$4\frac{5}{8}$	Anamalai Hills			Capt, T. W. Greenfield.
♀ I 2 ³ / ₈	$5\frac{1}{2}$	$2\frac{3}{8}$	Do.			M. Loam.
♀11 <u>3</u>	54	$4\frac{1}{8}$	Do.			Hon. Walter Rothschild.
			OWNER'S MEA	ASU	RE	MENTS.
17½	9 ⁷ / ₈	6	Nilgiris			Rhodes Morgan.
17	9₹ 3		Do			Measured by Gen. MacMaster, 1869.
16½			Do			St. George Littledale.
I 5½	$8\frac{3}{4}$	$4\frac{3}{4}$	Do			Major F. W. H. Walshe.



Head of Astor Markhor. Shot by Capt. H. Barstow in Gilgit.

The MARKHOR (Capra falconeri).

The markhor, of which there are several races, passing more or less completely into one another, introduces us to the true goats (Capra). The males differ from the tahr by their larger horns, the length of which greatly exceeds that of the head, and likewise by the presence of a distinct beard on the chin. In most races of the markhor the beard is extended so as to form a fringe on the throat and chest; the hair on the body is also elongated; and the horns form a spiral, unlike the scimitar-shape characteristic of the ibex and goat. In Gilgit the summer coat is yellowish white, and the winter-dress of the old bucks dark iron-grey.

Distribution.—The Western Himalaya, Gilgit, Afghanistan, Bokhara, etc.

A and B.—ASTOR and PIR PANJAL MARKHOR

(C. f. typica and C. f. cashmiriensis).

In the Astor, *C. falconeri typica*, and Pir Panjal, *C. falconeri cashmiriensis*, races of the markhor the horns take the form of an open corkscrew-like spiral, with comparatively few turns, recalling those of the kudu; the spiral being most open, the spread widest, and the turns fewest in the Astor form. Height at shoulder of a Gilgit specimen, $38\frac{1}{2}$ inches; of Kashmir specimens, from 38 to 41 inches; weight, from about 200 to 240 lbs. The Astor race is found in Astor, Baltistan, and Chilas, while the Pir Panjal form inhabits the Pir Panjal and Kajnag ranges of Kashmir, and extends to the north-west into Hazara. In Chitral and Gilgit occur gradations between horns of the Pir Panjal and Astor types.

Leng	th.							
On outside curve.	Straight line.	Circum- ference.	Tip to Tip.	I	Local	ity.		Owner.
60 3	394	II $\frac{1}{4}$	46	Gilgit				Capt. H. Barstow. (See illustration, p. 358.)
59	36	$10\frac{3}{4}$		Kajnag				LieutCol. S. D. Turnbull.
57₹	42	$10\frac{3}{4}$	41	Do.				Major A. R. Knox.
$57\frac{1}{2}$	40 '	**	$47\frac{1}{2}$	Drosh				Capt. B. C. Graham.
56	$51\frac{1}{2}$			Near Bu	nji			Capt. T. S. Johnson.
55	$44\frac{1}{4}$	11	47		?			East India Club.
55				Astor	٠			The late Otho Shaw.
$54\frac{1}{4}$		101	$26\frac{1}{2}$		3			British Museum (Hume Collection).
54	***	105	$33\frac{3}{4}$	Astor				Martyn Kennard.
5 3 ³ / ₄	$38\frac{1}{4}$	$12\frac{1}{4}$	$40\frac{1}{2}$	Do.				LieutCol. J. Manners Smith.
534 '	$37\frac{3}{4}$	10	35	Chilas				Major C. A. Smith.
531	$40\frac{1}{2}$	12	$43\frac{3}{4}$	Do.				Capt. J. A. Pottinger.
¹ 53 ¹ / ₄	$42\frac{1}{2}$	II $\frac{1}{2}$	52 about	Astor			٠	Sir Victor 'Brooke's Collec-
53	40	II	42	Gilgit	٠			Capt. H. F. L. Grant.
53	383	$9\frac{3}{4}$	$35\frac{1}{2}$	Do.				Hon. Walter Rothschild.
53	35₹	$II\frac{3}{4}$	$34\frac{1}{2}$	Pir Panj	al			Major F. W. H. Walshe.
53	$34\frac{1}{4}$	II	32	Astor				LieutCol. the Hon. C. Willoughby.
$52\frac{3}{4}$	$37\frac{1}{2}$	11	$35\frac{1}{2}$	Kajnag				Major A. G. W. Malet.

¹ Shot by Capt. Harry V. Brooke.

Len On outside curve.	Straight line.	Circum- ference.	Tip to Tip.	Locality.		Owner.
52½	39	I I	39	Gilgit		Col. G. D. F. Sulivan.
52½	38≩	I 2 1/4	44½	Chilas		P. F. Hadow.
515	36½	113	$37\frac{1}{2}$	Gilgit		LieutCol. B. E. M. Gurdon.
51½	40 1	13½	34	Astor		Capt. H. Whitaker.
513	37 ½	10	33	Pir Panjal .		Sir Edmund G. Loder, Bart.
51 ½		12	441	Haramosh .		Major P. H. G. Powell-Cotton.
51	36½	111	40½	Chilas		Capt. A. H. Cameron.
51	36‡	1112	31	Kajnag		Sir H. E. M. James.
51	36½	11	34½	Do		Col. J. W. A. Morgan.
503	36 1	12	$35\frac{1}{2}$	Do		Mess of the Seaforth High-
50½	36 1	ΙΙ	. 35	Do		landers. J. Arbuthnot.
50½	35 ³	$10\frac{1}{2}$	$45\frac{1}{2}$	Haramosh .		Capt. B. H. Shaw-Stewart.
504	39	12		Do		W. R. Read.
50	38	II 3	36	Astor		Sir Edmund G. Loder, Bart.
50	$36\frac{1}{2}$	I 2	36	Chilas		Major W. Hayes-Sadler.
50	37	II	46	?		Major C. R. Kelly.
50	$32\frac{1}{4}$	10	31	?		Capt. S. M. Toppin.
$49\frac{1}{2}$	$37\frac{1}{4}$	12	35	Baltistan		H. H. Cripps.
$49\frac{1}{2}$	39	121	$32\frac{1}{2}$?		G. O. Smyth.
49‡	36	111	32	Chilas		Major L. W. S. Oldham.
494	$36\frac{1}{2}$	II $\frac{1}{2}$	31	3		Capt. A. Young.
49	35	14	44	Astor		British Museum (Hume Collection).
49	$34\frac{1}{2}$	$10\frac{1}{2}$	37	?		LieutCol. E. B. Cook.
49	334	$10\frac{1}{2}$	$37\frac{1}{2}$?		P. Radclyffe.
49	$32\frac{3}{4}$	I I 🖁	36 3	3		N. S. Regnart.
484	34\frac{3}{4}	$12\frac{1}{2}$	363	Haramosh .		Hon. H. G. O. Bridgeman.
483	34	$10\frac{1}{4}$	$30\frac{1}{2}$?		Capt. H. A. G. Chamier.
$48\frac{1}{2}$	$39\frac{1}{2}$	9	27	Pir Panjal	. ,	J. G. Millais.
$48\frac{1}{2}$	35	13	41	Chilas		J. D. Cobbold.
$48\frac{1}{2}$		$II\frac{1}{2}$	45	Astor		Capt. M. Murphy.
$48\frac{1}{2}$	32	ΙΙ	31½	Baltistan		Major C. A. Smith.
481	36½	11	33½	?		Capt. A. H. Wilson.



Skull and Horns of Pir Panjal Markhor. From a specimen presented by the late Mr. A. O. Hume to the British Museum.

Len	gth.					
On outside curve.	Straight line.	Circum- ference.	Tip to Tip.	Locality.		Owner.
481	35	ΙΙ	$29\frac{1}{2}$	3		Capt. the Hon. A. C. Murray.
48	34	103	36	Astor	,	His Majesty the King.
48	373	I 2 4	29	Pir Panjal .	٠	British Museum (Hume Collection). (See illustration on this page.)
48	37	11	4 I	?		Capt. E. Berry.
48	34	91	39	5		Capt. A. Marshall.

Length.

On outside	Straight line.	Circum- ference.	Tip to Tip.	L	ocali	ty.		. Owner.
48	34	103	31 4		?			H. W. Seton.
48	$36\frac{1}{2}$	ΙΙ	30	Chilas (?)				Capt. E. Le G. Whitting.
			OWNER'S	S MEASU	RE	MEN	TS.	
¹ 63	•••	•••		Pir Panjal	l			Major-General A. A. A.
60				Astor				Kinloch. Lucknow Museum.
59		12	36	Kajnag				The late Major J. C. Shirres.
$57\frac{1}{2}$		I I 1 1	40	Do.				Capt. H. D. McLaughlin.
57	$40\frac{1}{2}$	$9\frac{3}{4}$	38	Gilgit				Marquis of Lansdowne.
$56\frac{1}{2}$	38	II	38	Kashmir				J. Benett-Stanford.
56 1	35	$10\frac{3}{4}$	37	Gilgit				W. P. Appleford.
56	365	$13\frac{2}{5}$	34 ⁵ / ₈	Kashmir				Viscount Edmond de Pon-
$55\frac{1}{2}$	•••	91	311	Chilas				cins. Mess of the Queen's Own
55	39	ΙΙ	34	Gilgit				Corps of Guides. F. M. Hodgkins.
55	$38\frac{1}{16}$	11	411	Do.				Mess of the 3rd Gurka Rifles.
53	$33\frac{1}{2}$	IO^{1}_{2}	•••	Baltistan				W. M. Logan-Home.
53	$31\frac{1}{2}$	10	33 4	Gilgit				Capt. H. R. P. Dickson.

¹ Picked up either on the Pir Panjal or the Kajnag Range by the late Col. Cuppage, and measured by General Kinloch.

Certain horns in the Hume Collection indicate a type in some degree intermediate between the Panjal and the Cabul type; their place of origin is unknown, but was probably somewhere west of the Indus.

CHITRAL SPECIMENS.

Leng		a.						
On outside curve.	Straight line.	Circum- ference.	Tip to Tip.		Local	ity.		Owner.
50½	37	10	341	Chitral				Capt. R. A. Lyall.
50	36	10	33	Do.				Major R. H. Macdonald.
471	34	$10\frac{1}{2}$	39	Do.				H. Gough.
			OWNER'S	S MEASU	JRE	MEN	TS.	
57	38	101	35	Chitral				Bombay Natural History Society.
56	41	II $\frac{1}{2}$	32	Do.				Major C. Rose.
53		11	34	Do.		,		Col. A. C. O'Donnell.
52	34	10	$33\frac{3}{4}$	Do.				Capt. G. W. Burton.
51 3		II	30½	Do.				Capt. J. Carruthers.
514			36	Do.				Major G. A. Leslie.
49	394	I I ½		Do.				Major C. R. Johnson.

C.—CHIALTAN RACE (C. falconeri chialtanensis).

Differs from other races in the form of the spiral of the horns. May perhaps turn out to be a hybrid between the markhor and domesticated goat; some Chialtan specimens being almost certainly of this nature.

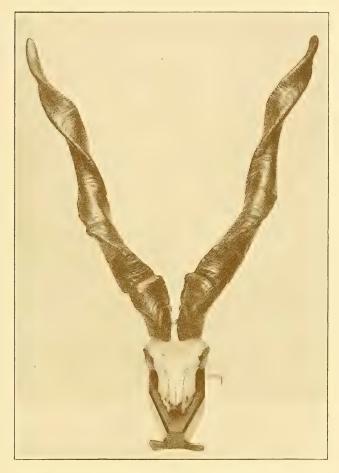
Distribution.—The Chialtan Range of Baluchistan.

Leng On outside curve.		Circum- ference.	Tip to Tip.	Locality.		Owner.
-36	25	$8\frac{1}{2}$		Chialtan Range	٠	Capt. W. M. Hunt (<i>The Field</i> , June 7, 1913).
$34\frac{1}{2}$	26	9	$13\frac{1}{2}$	Do.		British Museum (Col. H. Appleton).
-34	27	9		Do.		Capt. W. M. Hunt (The Field, June 7, 1913).

⁻ Owner's measurements.



Skull and Horns of Suleman Markhor. From a specimen presented by the late Mr. A. O. Hume to the British Museum.



Skull and Horns of Cabul Markhor. From a specimen presented by the late Mr. A. O. Hume to the British Museum.

D. and E.—CABUL and SULEMAN RACES

(C. falconeri megaceros and C. f. jerdoni).

In the Cabul race of the markhor (*C. falconeri megaceros*), typically from the trans-Indus districts near Cabul, the horns are nearly straight, but show a slightly open spiral; being, in fact, intermediate between those of the Pir Panjal and Suleman races. Markhor from the Chitral valley generally have horns of the Cabul type, but in some cases these conform to the Pir Panjal type; both types occurring in the members of one and the same flock. In the Suleman markhor (*C. falconeri jerdoni*) the horns form a perfectly straight cone, upon which the spiral ridges run

like the "worm" of a screw. The distributional area of the latter race includes the trans-Indus hill-ranges on the frontier of the Punjab, Afghanistan, and Baluchistan, extending in the Suleman range as far as Mithankot, and also to the Quetta district.

Length. Straight line.	Circum- ference		Locality.			Owner.
$48\frac{1}{2}$	7 3	Odd horn	?			British Museum.
39 ³	101	Suleman race 241	Afghanistan			British Museum (Col. Grant).
39 1	I 2.1	38	Range 25 miles of Wana	N.	W.	A. J. Grant.
$38\frac{1}{2}$	102	$23\frac{7}{8}$	Afghanistan			H.R.H. the Duke of Saxe-Coburg and Gotha.
38	10	26	Cabul			Capt. O. H. Radford.
37	10	32	Kurram Valley			LieutCol. Sir G. Roos-Keppel.
353	$9\frac{3}{4}$	15	Khyber Pass			Major E. Kirkpatrick.
34	ΙΙ	23	?			G. F. Giffard.
33	9‡	193	Afghanistan			Sir Edmund G. Loder, Bart.
$32\frac{3}{4}$	93	20	Waziristan .			Major G. Dodd.
321	9 3	28	?			British Museum (Hume Collection).
32	10	$27\frac{1}{2}$	Cabul .			British Museum (Hume Collection). See illustration on page 365.
31½	$9\frac{1}{2}$	27	Suleman Range			Hon. Walter Rothschild.
30 ³ / ₄	10	25	Baluchistan.			Col. J. Biddulph.
30	$9\frac{1}{2}$	$20\frac{3}{4}$	S. Waziristan			Capt. A. G. Shea.
29 ³ / ₁	$8\frac{1}{4}$	$23\frac{3}{4}$	Baluchistan .		:	LieutCol. R. H. Rattray.
291	10	19	Khyber Pass			Major A. L. Bickford.
29	$10\frac{1}{2}$	16	?			American National Collection.
28½	$9\frac{1}{2}$	18 <u>3</u>	Sheik Budin			J. C. Phillips.
27	9	18	Do.			Col. J. Biddulph.
26 <u>3</u>	I I ½	22 1 g	Suleman Range		٠	British Museum (Hume Collection). See illustration on page 364.
		OWI	NER'S MEASU	RE	MEN'	TS.
36	11	32	Bunnu .			F. M. Hodgkins.
33½	104	23	?			Bombay Natural History Society.
32½	10	2	Bunnu .			Mess of the Queen's Own Corps of Guides. C. P. Henderson.
314	9½ 9¾	17 ³ / ₄ 25				R.E. Mess, Roorkee.
31	94	23				ACLES MACOS, ICOURCE.



Head of Tien Shan race of Asiatic Ibex. From Lord Elphinstone's specimen.

The SAKIN or ASIATIC IBEX (Capra sibirica).

The first of the true ibexes, in all of which the long scimitar-shaped horns carry bold transverse knots on the front surface. In the present species the horns are characterised by their large size and well-developed front surface; the second distinctive feature being the long beard of the males. Height at shoulder, from 40 to 42 inches. Weight, about 206 lbs.; when cleaned, from 128 to 153 lbs.

Distribution.—The mountains of Central Asia, from near Lhasa, the Tien Shan, and the Altai to the Himalaya (exclusive of the Pir Panjal), and from the neighbourhood of Herat to Kumaon and adjacent districts as far east as the source of the Ganges. Several local races of this species are recognised; the typical race (C. sibirica typica) of the Sayansk range, the Irtish race (C. s. altaica), the Tien Shan race (C. s. almasyi), the Gilgit race (C. s. pedri), the Katutay ibex (C. s. lydekkeri), the Balti ibex (C. s. wardi), the Himalayan ibex (C. s. sacin) from the mountains to the northward of Kashmir, and the Lahul (C. s. filippii).

TIEN SHAN RACE.

Length on front curve.	Circum- ference.	Tip to Tip.	L	ocali	ty.		Owner.
58	111	$44\frac{1}{2}$	Tien Shan				Col. H. Appleton.
57章	ΙΙ	$40\frac{1}{2}$	Do.				C. H. Bury.
$57\frac{1}{2}$	$10\frac{3}{4}$	24	Do.				H. M. von Archer.
57½	11 <u>3</u>	28	Do.				Capt. G. R. H. Cheape.
57ቔ	11	30	Do.				A. Bayley-Worthington.
56₹	II $\frac{1}{2}$	36½	Do.				Lord Elphinstone.
$56\frac{3}{4}$	$10\frac{1}{2}$	31	Do.				Capt. J. F. Turner.
$56\frac{1}{4}$	II	40	Do.				R. F. Glyn.
56	101	$21\frac{3}{4}$	Do.				P. F. Hadow.
54₹	111	29	Do.				P. B. Vander Byl.
54≟	111	301	Do.				Major A. D. Greenhill-Gardyne.
541	II $\frac{1}{4}$	•••	Do.				B. Chew.
1 54	$10\frac{3}{4}$	45	Do.				His Majesty the King.
53₹	I I ½	45	Do.				J. H. Miller.
53 ³ / ₄	$10\frac{1}{2}$	$33\frac{1}{2}$	Do.				Ford G. Barclay.
$53\frac{3}{4}$	$II\frac{3}{4}$	34	China				Major P. Hambro.
534	II $\frac{1}{2}$	42	Tien Shan				R. Hayne.
531	104	213	Do.				Col. C. B. Wood.
$53\frac{1}{4}$	$I2\frac{1}{4}$	35	Do.				Capt. J. N. Price Wood.
53	12	$35\frac{1}{2}$	Do.				St. George Littledale.
$52\frac{1}{2}$	124	26	Do.				P. Church.
$52\frac{1}{4}$	II $\frac{1}{2}$	$22\frac{1}{2}$	Do.				T. P. Miller.
52	II $\frac{1}{4}$	403	Do.				W. R. Read.
513	$12\frac{1}{2}$	48	Do.	٠.			Capt. H. Whitaker.
51 ³ / ₄	12	34	Do.			٠	Capt. the Hon. G. H. Douglas-Pennant.
505	111	$35\frac{1}{2}$	Do.				British Museum (St. George Littledale).
50}	$10\frac{3}{4}$	31	Do.				C. C. Tower.
50	11	30½	Do.				Marquis of Lansdowne.
50	111	$24\frac{1}{2}$	Do.				Col. A. H. Hussey.
50	12	194	Do.				J. V. Phelps.
48½	101	381	Altai.				Col. C. B. Wood.
461	12	$20\frac{1}{2}$	Do.				Hon. Walter Rothschild.

¹ Shot by St. George Littledale.

LADAKI, BALTI, and KASHMIRI RACES.

Length on front curve.	Circum- ference.	Tip to Tip.	L	ocality	у.		Owner.
55	1 I ½	35	Gilgit				LieutCol. B. E. M. Gurdon.
531	$10\frac{1}{2}$	201	Do.				Col. J. Biddulph.
511	$9\frac{1}{2}$	$34\frac{1}{2}$?			LieutCol. J. Manners Smith.
49 ³ / ₄	10	$2I\frac{1}{2}$	Chitral				British Museum (LieutCol.
49	101	$9\frac{1}{2}$	Skardo				B. E. M. Gurdon). Major George Douglas.
484	IO^1_2	33	Baltistan				H. H. Cripps.
$48\frac{1}{2}$	98	$30\frac{1}{2}$	Nubra, n	orth	of Le	eh .	British Museum (Hume Collec-
$48\frac{1}{2}$	9	$22\frac{3}{4}$	Kashmir				tion). Col. G. D. F. Sulivan.
481/2	$10\frac{1}{2}$	28	Do.				Capt. S. H. Charrington.
481	$10\frac{1}{4}$	$29\frac{3}{4}$	Ladak				Capt. R. H. R. Brocklebank.
$47\frac{1}{2}$	83	29 ³ / ₄	Chitral				M. Ostreham.
47	104	35	Baltistan				Lady Constance Stewart- Richardson.
46 3	10	18½	5				E. R. Harris.
46 3	9‡		Kashmir				LieutCol. E. B. Cook.
$46\frac{3}{4}$	93	251	Do.				P. Radelyffe.
$46\frac{3}{4}$	9^{3}_{4}	$22\frac{1}{2}$	Do.				LieutCol. W. Goring.
$46\frac{1}{2}$	10	25½	Kashmir				G. A. Lloyd.
$46\frac{1}{2}$	$10\frac{1}{2}$	$23\frac{1}{2}$?			Major J. S. Bogle.
46‡	\mathbf{IO}_{2}^{1}	$\mathbf{I} 2 \frac{\mathbf{I}}{2}$?			Capt. E. T. W. McCausland.
46	$10\frac{1}{2}$	$17\frac{3}{4}$	Baltistan				Capt. R. S. H. Walpole.
46	101	2I 5		?			Major C. E. Palmer.
46	103	121	Ladak				P. F. Hadow.
46	10	$24\frac{1}{2}$?			Capt. H. G. Stafford.
46	11	$14\frac{1}{2}$	Kashmir				Capt. H. Meynell.
46	103	$25\frac{1}{4}$	Do.				J. Platt.
$45\frac{3}{4}$	101		Do.				Capt. H. Nicolay.
$45\frac{3}{4}$	II	I 3 ½	Do.				F. H. Norton.
453	9	19	Baltistan				Hon. A. G. Brand.
45 3	\mathbf{IO}_{2}^{1}	18		?			J. V. E. Lees.
45½	$9\frac{1}{2}$	33₹	Pamir				Major J. B. Mackintosh.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.			Owner.	
45½	$9\frac{3}{4}$	192	Pamir				LieutCol. R. L. Kennion.
$45\frac{1}{2}$	9 ³ / ₄	$19\frac{1}{2}$	Baltistan				T. R. Ubsdell.
$45\frac{1}{2}$	$10\frac{1}{2}$	27	Do.				His Majesty the King.
45½	IO	$18\frac{1}{2}$?			Capt. A. Courage.
45	9	${\tt I}2\tfrac{1}{2}$	Baltistan				Major C. B. Vandeleur.
		OWI	NER'S ME	EASU	JRE	MEN	TTS.
$56\frac{1}{2}$	I I ½	374	Tien Shar	ì.			LieutCol. H. M. Biddulph.
55			Tagdumb	ash			Col. A. E. Ward.
1 54 §	101	25	Gilgit				Mess of the Queen's Own Corps of Guides.
$52\frac{1}{2}$	11	113	Hunza				Capt. H. R. P. Dickson.
52	10		Baltistan				H.H. the Maharaja of Travancore.
51½	***		Kashmir				Martyn Kennard.
51			Do.				Col. A. E. Ward.
51	101	29	Gilgit				F. M. Hodgkins.
451	$9\frac{5}{8}$	$24\frac{3}{4}$	Baltistan				Mess of the Queen's Own Corps of Guides.
45	10	$20\frac{1}{4}$	Gilgit				Col. J. Biddulph.

¹ Picked up by Maj.-Gen. R. E. Hutchinson.

The IBEX or STEINBOCK (Capra ibex).

This species, which only survives in a protected state, differs from the Asiatic ibex by the much smaller size of the beard of the male, as well as by a slight variation in the horns; the height at the shoulder reaching to about 34 inches. Weight, from 85 to 106 lbs. clean. Formerly distributed throughout the higher Alps of Switzerland, Savoy, and the Tyrol, but now surviving only in a few valleys on the Italian side of Monte Rosa. Most of the few specimens now obtainable are comparatively small, and good horns are very scarce in English collections.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.		Owner.
$34\frac{1}{2}$	$9\frac{3}{4}$	26‡	Styria .		Sir Edmund G. Loder, Bart.
29	83	101	Valley of Aosta		Rev. J. M. Gordon.
283	83	171	Do.		J. Hamilton Leigh.
28	9‡	17‡	Do.		Hon. Walter Rothschild.

Length on front curve.	Circum- ference.	Tip to Tip.	Weight.	Locality.		Owner.
$27\frac{1}{2}$	94	$11{\textstyle{1\over2}}$		Valley of Aosta		Royal Scottish Museum.
26 ³	83	$22\frac{1}{8}$		Do.		British Museum.
			OWNER	R'S MEASUREMI	ENTS	5.
44 ⁵ / ₈	104		170 lbs.	Valley of Aosta		H.M. the King of Italy.
39 ³ / ₄	101/8	401		5		Imperial Museum, Vienna.
38 5				Valley of Aosta		H.M. the King of Italy.
30	9	21	•••	3		Dublin Museum.
281	03	18		Valley of Aosta		C. H. Wilczek.



Ibex Head, in the possession of H.M. the King of Italy.



Skull and Horns of Abyssinian Ibex. Shot by Major P. H. G. Powell-Cotton.

The WALA or ABYSSINIAN IBEX (Capra vali).

This ibex, the wala of the natives of Simien, differs from the Nubian ibex by its stouter build, shorter beard, and larger and more massive horns, on which the knots are but slightly prominent, as well as by its darker colour and superior size. The forehead of the skull has a conspicuous bony prominence. Although described by Rüppell in 1835, this ibex was practically unknown till 1901, when a fine series of specimens was brought home by Major Powell-Cotton. Height at shoulder, about 40 inches. Weight, about 260 lbs.

Distribution.—The mountains of Simien, Abyssinia.

Length on front curve.	Circum- ference.	Tip to Tip.		Loc	ality.		Owner.
43 8	II $\frac{1}{4}$	27	Abyssinia				British Museum (Major P. H. G. Powell-Cotton).
435	$11\frac{1}{8}$	$12\frac{1}{2}$	Do.				Major P. H. G. Powell-Cotton.
43	$10\frac{1}{2}$	23	Do.				Admiral the Hon. Sir Hedworth Meux.
1 ₄₂ 3	101	183	Do.				Her Majesty Queen Alexandra.
413	II	163	Do.				Major P. H. G. Powell-Cotton.
40\$	II		Do.				Hon. Walter Rothschild.
♀ 13‡	47	85	Do.				Major P. H. G. Powell-Cotton.

Presented by the late Ras Makunnan, 1902.



Head of Nubian Ibex. Shot in the Red Sea Province by Mr. J. H. Miller.

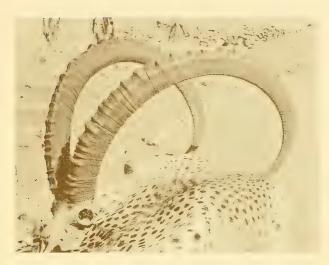
The BEDEN or NUBIAN IBEX (Capra nubiana).

This species may be easily distinguished from both the Asiatic and the Alpine ibex by the form of the horns, which are very long, rather slender, and with the outer front angle much bevelled off, so that the proper front surface is very narrow, and its transverse knots proportionately short. Three races are recognised, namely, the typical Nubian form, *C. n. typica*, the S. Arabian *C. n. mengesi*, and the Sinaitic *C. n. sinaitica*. In the form of its horns the latter approximates to the wild goat.

Distribution.—The mountains of Southern Arabia, Palestine, the Sinaitic Peninsula, Upper Egypt, and probably also those of Morocco and the interior of Senegambia. Arabian name, beden.

A.—NUBIAN RACE (C. nubiana typica).

Length on front curve.	Circum- ference.	Tip to Tip.	Locali	ty.			. Owner.
46 1	8		North Africa				British Museum.
$45\frac{1}{2}$	8	$32\frac{1}{2}$	Do.				H.H. Prince Omar Toussoun.
45	$7\frac{3}{4}$	16§	Red Sea Provi	nce			G. E. Burnett-Stuart.
$44\frac{1}{2}$	8	$16\frac{1}{2}$	Do.				J. H. Miller. (See illustration,
43\frac{3}{4}	$9^{\frac{1}{4}}$	$6\frac{3}{4}$	North Africa				p. 373.) Percy C. Madeira.
431	7‡	221	Do.				LieutCol. H. R. Lloyd.
43	8	19	Near Suakin				A. L. Butler.
42	$7\frac{1}{2}$	20	Do.				Hon, Walter Rothschild.
41 3	7 \$	$17\frac{5}{8}$	North Africa		,		Major W. H. Besant.
$40\frac{3}{4}$	$7\frac{3}{4}$	$20\frac{3}{4}$	Do.				W. H. Watney.
401	$7\frac{1}{2}$	24	Do.				A. Fowler.
401	$7\frac{1}{2}$	183	Do.				H. Boughton Leigh.
40	8	$19\frac{1}{2}$	Do.				Major H. H. S. Morant.
$38\frac{7}{8}$	$7\frac{1}{2}$	$I2\frac{1}{2}$	Upper Egypt				Sir Edmund G. Loder, Bart.
$38\frac{1}{2}$	$7\frac{1}{2}$	$14\frac{1}{4}$	North Africa				Prince E. Demidoff.
$38\frac{1}{2}$	83	101	Do.				Lord Villiers.
$38\frac{1}{2}$	7	21 <u>3</u>	Suakin .				L. C. G. Clarke.
$38\frac{1}{2}$	$7\frac{3}{4}$	23	Do				P. B. Vander Byl.
			OWNER'S M	EAS	SUR	EME	ENTS.
51	8 <u>5</u>	$39\frac{1}{2}$	Upper Egypt				The late Prince Henry of Liechten- stein.
434			Do.				C. S. Mann.



Skull and Horns of Arabian Ibex. Shot by Major W. Merewether.

B. and C.—S. ARABIAN and SINAITIC RACES (C. nubiana mengesi and sinaitica).

Length on front curve.	Circum- ference.	Tip to Tip.		Local	ity.			Owner.	
50	9		Southern	n Arab	ia			Capt. J. T. Brinkley.	
42	74		Arabia					East India Club.	
$41\frac{1}{2}$	8	$16\frac{1}{2}$	Do.					Sir Edmund G. Loder, Bart.	
$39\frac{1}{2}$	878	192	South-E	East Ar	abia			Hon. Walter Rothschild.	
$38\frac{1}{2}$	$7\frac{1}{2}$	12	Sinai					R. Hayne.	
37 ³	7	$13\frac{1}{2}$	Do.					Capt. C. P. Heywood.	
$37\frac{1}{2}$	$6\frac{1}{2}$	12	Do.					P. Swan.	
$36\frac{3}{4}$	$7\frac{1}{2}$	9‡	Do.					W. H. Tottie.	
36 <u>3</u>	7	10	Do.					P. A. Kennedy.	
\$ 10 ⁸	31	$2\frac{1}{2}$	Do.					W. E. Pease.	
OWNER'S MEASUREMENTS.									
49 ¹ / ₈	81/2	12	Souther	n Aral	oia			Major W. Merewether. (See	
39			Sinai					illustration.) Capt. L. Buxton.	



Skull and Horns of Sind Wild Goat. From a specimen presented by the late Mr. A. O. Hume to the British Museum.

The PASANG or WILD GOAT (Capra hircus).

The horns of the wild goat (*C. hircus ægagrus*) of the Caucasus and Persia—which is the ancestral form of the domesticated goat of Europe and Asia (*C. hircus*)—differ from those of the various species of ibex by having no distinct front surface, but merely a sharp notched keel, representing the inner front angle of the ibex horn. In old males the beard is very long. The general colour of the upper-parts is brownish grey in winter and reddish brown in summer, while the under-parts are white, and there are blackish brown and white markings on the body, face, and limbs. Height at shoulder reaching to 37 inches.

The so-called Sind ibex (*C. hircus blythi*) forms a second local race of the species, inhabiting Sind and parts of Baluchistan, where it probably passes imperceptibly into the Caucasian race. It is distinguished mainly by a slight difference in the form of the horns. Other races are found in some of the islands of the Ægean Archipelago, where they appear to have been more or less crossed with domesticated breeds.

Distribution.—The islands of South-Eastern Europe, and the mountains of South-Eastern Europe and South-Western Asia from the Caucasus through Asia Minor and Persia to the confines of Baluchistan and Sind. Persian name, pasang (rock-footed).

A.—CAUCASIAN RACE (C. hircus ægagrus).

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.			Owner.
$55\frac{1}{2}$		24	Persia .			Carl Hagenbeck.
514	9	7	Russian Turkest	an		The late Prince P. Demidoff.
484	83	$13\frac{7}{8}$	Caucasus .			British Museum.
474	7출	83	Persia .			LieutCol. R. L. Kennion.
46½	87	187	Asia Minor			F. C. Selous.
$46\frac{1}{4}$	$9\frac{1}{2}$	$14\frac{1}{4}$	Do			T. Bowen Rees.
$45\frac{1}{2}$	83	5	Do			R. Graham.
45	7‡	•••	British Mekran			Capt. A. W. White.
$44\frac{1}{2}$	87/8	213	Caucasus .			British Museum.
$43\frac{1}{2}$	10	$12\tfrac{1}{2}$	Persia .			Hon. W. Erskine.
43	9	$15\frac{3}{4}$	Taurus Range			Sir Edmund G. Loder, Bart.
43	$8\frac{1}{2}$	$14\frac{1}{2}$	N. Persia .			Capt. C. T. Daukes.
43	81	$22\frac{3}{8}$?			J. Carr Saunders.
		0	WNER'S MEA	SIID	EW	FNTS
	,					
53	10	46	Asia Minor	٠	٠	B. Hodder.
$50\frac{3}{4}$	$9\frac{1}{4}$	14	Taurus Range	٠	٠	Count C. Deym.
$47\frac{1}{2}$	91		Cilician Taurus			C. G. Danford.
45≩	$8\frac{3}{4}$	$9\frac{3}{4}$	Daghestan .			E. N. Buxton.
$45\frac{1}{4}$	91	21	Damascus .			Dr. Albert von Stephani.
43½	10	$21\frac{1}{2}$	Asia Minor			D. Forbes.

B.—SIND RACE (C. hircus blythi).

Length on front curve.	Circum- ference.	Tip to Tip.		1	Locality		Owner.
528	7 g	83	Sind		٠		British Museum (Hume Collection). (Shot by Col. F. Marston.) See illustration.
$49\frac{1}{2}$	$7\frac{3}{4}$	11	Do.				Capt. L. P. Haviland.
-48	8	$20\frac{1}{2}$	Do.				J. D. Inverarity.
46 3	$7\frac{5}{8}$	14	Do.				Sir Edmund G. Loder, Bart.
46	7 §	ΙI	Do.				Major C. S. Cumberland.

⁻ Owner's measurements.



Head of Domesticated Goat from Daghestan. Sir Edmund G. Loder's specimen.

DOMESTICATED GOATS.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.				Owner.
$52\frac{1}{2}$	$10\frac{1}{2}$	40 5	Daghestan				Sir Edmund G. Loder, Bart.
441	6	29‡	Angora				Do.
40½	98		Daghestan				Do.
$37\frac{1}{2}$	74	$32\frac{3}{4}$	Scotland				Col. W. Hall Walker.
-37	$7\frac{1}{2}$	35	Meoble				Walter Jones.
354	7章	38‡	?				B. de Bertodano.
344	$7\frac{1}{2}$	38½	Scotland				Duke of Bedford.
34	83	32½	Do.				F. C. Selous.
33½	8	261	Meoble				Hon. O. C. Molyneux.

⁻ Owner's measurements.



Skull and Horns of Spanish Ibex. H.M. The King of Spain's record specimen.

The SPANISH IBEX (Capra pyrenaica).

Although commonly designated an ibex, the Spanish wild goat has horns more like those of one of the Caucasian ture, and is therefore better regarded as a species of that group. The horns, which have a sharp inner edge, are twisted in a very open semi-spiral, with the tips generally turned outwards, and are quite unlike those of the true ibex. In having dark and light markings on the limbs the species is, however, much more like the wild goat than either of the Caucasian ture. The beard of the males varies greatly in size according to age and season. Height at shoulder, from about 27 to 32 inches; weight, when clean, about 10 stone.

Distribution.—The Pyrenees and the high ranges of Central Spain, Andalucia, and Portugal. The typical race of the species inhabits the Pyrenees; the ibex of the Serra do Gerez, Portugal, said to have less spreading horns, is separated as C. pyrenaica lusitanica; those of the Sierra Nevada form a third race (C. p. hispanica), characterised by the slight development of the black markings; and a fourth race (C. p. victoriæ), intermediate between the typical race and hispanica, is found on the Sierra de Grados.

RECORDS OF BIG GAME

Length on outside curve.	Circum- ference.	Tip to Tip.	Locality.		Owner.
$33\frac{1}{2}$	91/2	$26\frac{1}{2}$	Sierra de Gredos	. 1	H.M. the King of Spain.
31	84		Pyrenees		Sir Victor Brooke's Collection.
30½	9	26	Sierra de Gredos	· []	Marquis de Viana. Marquis de Villaviciosa.
$29\frac{1}{4}$	$9\frac{1}{2}$	$23\frac{1}{4}$	Sierra Nevada .		Abel Chapman.
28	9 ¹ / ₈	238	Spain	,]	British Museum.
274	9	25	Central Spain .		Sir Edmund G. Loder, Bart.
25 ⁵ / ₈	81	16 <u>5</u>	Spain		Hon. Walter Rothschild.
$25\frac{1}{2}$	$7\frac{3}{4}$	$10\frac{1}{2}$	Nr. Cordova .		Lord Hindlip.
$24\frac{1}{2}$	IO	14	Val d'Arras .		E. N. Buxton.
238	8	16	Southern Spain .	. 1	Marques Marzales.
22 ³ / ₄	9½	183	Val d'Arras .	. 1	E. N. Buxton.
22 5	10	$I5^{-9}_{\overline{1}\overline{6}}$	Sierra de Gredos	. 1	Duke de Turancon.
$9\frac{1}{2}$	58	61	Val d'Arras .	. :	E. N. Buxton.
		OW	NER'S MEASUR	EME	NTS.
301	$9\frac{1}{2}$	$23\frac{1}{2}$	Central Spain .		Abel Chapman and W. J. Buck.
$29\frac{3}{4}$	81	231	Almeira		H. Brinsley Brooke.
29 ⁵ / ₈	9 1	2 0 $^{7}_{8}$	Sierra de Gredos	. 1	Natural History Museum, Madrid.
$29\frac{1}{2}$	81	$20\frac{1}{2}$	Sierra Nevada .		Do.
28 <u>3</u>	$10\frac{1}{2}$	28 5	?	1	Imperial Museum, Vienna.
281	$9\frac{3}{4}$	$24\frac{1}{2}$	Sierra de Gredos	. 1	Marques de la Torrecilla.
275	98	$20\frac{1}{2}$	Do.		Marques de Viana.
27 ₁ ⁹ 5	104	$2I_{16}^{1}$	Do.		H.M. the King of Spain.
27½	81/2	$20\frac{1}{2}$	Do.	. J	ose del Prado.
27	101	$20\frac{1}{2}$	Do.	. :	H.M. the King of Spain.
$25\frac{1}{2}$	$9\frac{1}{2}$	13	Spain	,	W. J. Buck.
გ 10 ჭ	5 5	$7\frac{1}{2}$	Val d'Arras .		A. E. Leatham.



Western Tur or Caucasian Ibex. Shot by Mr. P. B. Vander Byl.

WESTERN TUR or CAUCASIAN IBEX (Capra severtzowi).

Of the two peculiar kinds of wild goats inhabiting the Caucasus and locally known as ture, the present species is easily recognised by the approximation in the form of its horns to those of true ibex, and the uniform chestnut-brown colour of the male in the summer coat; the chin, beard, and lower part of the legs being dark brown. In adults the beard, when fully developed, is long, straight, and narrow. Height at shoulder, about 42 inches.

Distribution.—The western half of the main chain of the Caucasus. The typical race (C. severtzowi typica) inhabits the mountains west of Elbruz. It is the larger, and has the knots on the horns moderately developed. Still farther west, in the North-western Caucasus, although somewhat overlapping the range of the first, comes Dinnik's race (C. s. dinniki), the range of which to the west, like that of the species, is limited by Mount Shungus.

A.—TYPICAL RACE (C. severtzowi typica).

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.					, Owner.
40	I 3 ² / ₅	$14\frac{1}{2}$	W. Caucas	us.				St. George Littledale.
37	$\mathrm{I}\mathrm{I}\tfrac{1}{2}$	$26\frac{1}{2}$	Do.					Do.
34 ⁸ / ₄	II	16	Do.					British Museum.

B.—NORTH-WESTERN RACE (C. severtzowi dinniki).

Length on front curve.	Circum- ference.	Tip to Tip.	Loc	ality.	Owner.		
$34\frac{1}{2}$	12	22	Kuban, N.W. (Caucasus	S.		Prince E. Demidoff.
334	121		Do.				P. B. Vander Byl.
$32\frac{1}{2}$	I I $\frac{3}{4}$	$22\frac{3}{4}$	Do.	,			Do.
324	$\mathrm{I}\mathrm{I}\tfrac{1}{2}$	251	Do.				Prince E. Demidoff.
30§	I13	168	Do.				Sir Edmund G. Loder, Bart.
30	$\operatorname{II}\tfrac{1}{2}$	19½	Do.				Hon. Walter Rothschild.



Head of Pallas's Eastern Tur. Shot by Prince E. Demidoff.

EASTERN TUR or CAUCASIAN BHARAL (Capra caucasica).

Distinctly different from the last is the wild goat commonly designated by sportsmen the "Caucasian bharal"; this name being derived from the resemblance of its horns to those of the true Himalayan bharal. In spite of this point of resemblance, its affinities are, however, evidently with the goats, although it indicates a step from the more typical members of that group in the direction of the bharal. Both races are characterised by the width and shortness of the beard, which forms a curling fringe on each side of the chin. The general colour of the coat in the bharal-like race is uniform dull brown, except on the chin, the tip of the tail, and portions of the legs, where it is blackish brown. Height at shoulder, about 3 feet.

Although generally classed as typifying a species, Pallas's tur is best regarded as a race of the true *C. caucasica*, in which the horns are somewhat less bharal-like, and may show small knots in front.

Distribution.—The Central Caucasus and the Eastern Caucasus, from Kasbek to Daghestan.

A.—TYPICAL RACE (C. caucasica typica).

Distribution.—Central Caucasus to east of Elbruz.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.		Owner.
291	121	?	Central Caucasus		Specimen described by Dinnik.

The following specimen, which has been regarded as a hybrid, is intermediate in character between the above and *C. severtzowi*,

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.	Owner.
223	10%	221	Elbruz District	St. George Littledale.

B.—PALLAS'S RACE (C. caucasica cylindricornis).

			·		-
Length on front curve.	Circum- ference.	Tip to Tip.	Locality.		Owner.
46	134	83	Eastern Caucasus		Prince E. Demidoff.
44 ³ / ₄	$13\frac{1}{2}$	10	Do.		The late Prince P. Demidoff.
43	14	$\scriptstyle 17\frac{1}{2}$	Do.		British Museum (the late Prince
$40\frac{1}{2}$	$12\frac{1}{4}$	152	Do.		P. Demidoff). P. B. Vander Byl.
40	$12\frac{1}{2}$	10	Do.		P. H. Thomas.
39	$13\frac{1}{10}$	19	Do.		St. George Littledale.
$38\frac{1}{2}$	13	17	Do.		Do.
38‡	I 2 ½		Eastern Caucasus		Hon. Walter Rothschild.
$36\frac{3}{4}$	134	163	Do.		Count H. de Ganay.
36	13		Daghestan		J. D. Cobbold.
351	12	181	Eastern Caucasus		Rhys Williams.
35	$12\frac{3}{4}$	201	Do.		Mervyn G. Williams.
35	$12\frac{1}{2}$	16	Do.		S. Whitehouse.
343	133	241	Do.		Duke of Alba.
$34\frac{1}{2}$	108	$13\frac{1}{2}$	Do.		Major Talbot.
$33\frac{3}{4}$	13	171	Do.		Sir Edmund G. Loder, Bart.
32	13	19	Do.		Berthold Smith.
32	II $\frac{1}{2}$	22	Do.		Sutton Timmis.
$31\frac{1}{2}$	12	7 ‡	Do.		F. G. Barclay.
31	ΙΙ	28	Do.		Capt. H. H. P. Deasy.

BHARAL 385



Skull and Horns of Bharal.

The BHARAL or BLUE SHEEP (Pseudois nahura).

Ta-sang-yang, Chinese.

With horns not unlike those of Pallas's tur, the bharal or blue sheep of Tibet differs from the goats by the absence of a beard and a strong odour in the males, and on account of these and other points of difference from the goats is placed next the sheep, of which group it forms a very aberrant member. The most distinctive external features are the comparatively smooth and olive-coloured horns, which curve at first outwards and then backwards from the sides of the head, and the bluish grey colour of the thick coat of the back and sides, the flanks, under-parts, and legs being handsomely marked with black and white. Height at shoulder, about 36 inches; weight, about 130 lbs. In the complete absence of glands on the face, and the rudimentary condition of those between the hoofs, the bharal differs from typical sheep and approximates to goats.

Distribution.—From Hunza, and Shigar, in Baltistan, and near Sanju, south-east of Yarkand, to Sze-chuan and Shen-si, and from the main axis of the Himalaya, or locally some distance south of the same, to the Kuenluen and Altyn Tag; in summer usually met with at elevations between 14,000 and 16,000 feet, and apparently never found below about 10,000 feet.

Length on front curve.	Circum- ference.	Tip to Tip.	Lo	cality.			Owner.
$31\frac{1}{2}$	13½	$22\frac{1}{2}$	Ladak				J. Campbell of Kilberry.
30 ⁷ / ₈	121	$21\frac{7}{8}$	Garhwal				British Museum (Hume Collection).
$30\frac{1}{2}$	10	181		?			Major F. G. T. Deshon (King Edward's Hospital for Officers).
30	134	$25\frac{1}{4}$	Ladak			٠	Hon. Walter Rothschild.
30	11	24	Hanle, Sp		•	٠	Major B. L. Carew.
29½ 29½	115 12	$25\frac{1}{2}$ $26\frac{1}{2}$	Northern	? Sikhii	n .		H.R.H. the Duke of Saxe- Coburg and Gotha. Major A. Pearse.
283	101	211		?			Major Lord Charles M. Nairne.
283	121	22	Chang-che	enmo			Capt. B. H. Shaw-Stewart.
281	113	161		?			Major C. A. Vivian.
$28\frac{1}{2}$	121	26½	Hanle.				Major F. W. H. Walshe.
28	II	201		?			British Museum (Hume Collection).
28	ΙΙ	16	Hanle.				Arnold Pike.
$27\frac{3}{4}$	$10\frac{1}{2}$	$23\frac{1}{2}$?			R. H. Edmondson.
274	101	10	Ladak				Capt. G. Campbell.
$27\frac{1}{2}$	13	34	Kumaon				E. R. Neave.
$27\frac{1}{2}$	103	163		?			P. Radclyffe.
271	11	$21\frac{1}{2}$	Ladak				St. George Littledale.
$27\frac{1}{4}$	12	251	Do.				Col. H. Appleton.
27	121	$22\frac{1}{2}$	Do.				Capt. R. S. H. Walpole.
27	I I 1 1	25 ³ / ₄	Do.				Capt. A. E. Cathcart.
.27	I I ½	28	Tibet .				Major C. S. Cumberland.
26 <u>3</u>	101/2	16‡	Ladak				Capt. W. F. Reichwald.
-		_	AIDDIG AF	T) A CI	7 50 50 5	£ 733	
		OW.	NER'S M				
$33\frac{1}{4}$	•••	•••	Shot on L		Ехре	di-	H. H. Hayden.
$32\frac{1}{2}$		12	Milam Pa		٠.		Major W. de L. Williams.
1302	11	$15\frac{1}{2}$	Ladak				Major P. H. G. Powell-Cotton.
30			Baba Pass	· .			Major R. W. Johnston.
29	12			5			LieutCol. A. E. Ward.
$28\frac{1}{2}$	II	9	Ladak				R.E. Mess, Roorkee.
$28\frac{1}{2}$	$10\frac{1}{2}$			5			Indian Museum.
			Chinese	Spe	cime	ns.	
Length on front curve.	Circum- ference.	Tip to Tip.		ocality.			Owner.
-26½	12	29	Ta-chi-lu				M. Mitchell.
$24\frac{1}{4}$	I I ½	31½	Kan-su,	Γibet '	borde	r.	K. K. Horn.
183	ΙI	$27\frac{3}{4}$	SW. box				H. F. Wallace.
171/2	101	24	I	00.			G. Fenwick-Owen.

- Owner's measurements.

Picked up.



Head of Arui.

The ARUI, UDAD, or BARBARY SHEEP (Ammotragus lervia).

The only wild sheep found throughout the continent of Africa is the arui or fechstal of the Arabs, the udad or Barbary sheep of naturalists; a species with horns not very unlike those of the bharal, and also lacking glands on the face, but readily distinguished by its uniformly tawny colour, the fringe of long hair depending from the throat, chest, and the upper portion of the fore-legs, and the unusual length of the tail, which exceeds that of all other wild sheep. In the length of this appendage the arui approaches many domesticated sheep, of which, however, it is not the ancestor. Height at shoulder, about 3 feet 3 inches. Three races are recognised.

Distribution.—The mountains of Northern and North-Eastern Africa, from Morocco to Egypt, and thence southwards nearly to Khartum, in about lat. 16° N.: also the desert south of Biskra.

Length on outside curve.	Circum- ference.	Tip to Tip.	Loc	ality.			Owner.
33 ¹ / ₄	131	$12\frac{3}{4}$	Algeria				Sir Abe Bailey.
29 ¹ / ₈	$12\frac{1}{2}$	19	Do.				V. Cholmondeley.
283	12	14 <u>3</u>	Do.				R. A. Cooper.
28½	I I ½	18	Do.				British Museum (Hon. John Ward).
$2S_{\frac{1}{2}}^{1}$	I I 5	181	Do.				Sir Edmund G. Loder, Bart.
$27\frac{3}{4}$	16	301	Sudan				D. P. MacGillivray.
$27\frac{1}{2}$	12	21	Tunisia				P. H. Thomas.
$26\frac{1}{2}$	ΙΙ	19	Algeria				W. H. Lindsay.
26	111	161	Do.				WH. Edgar.
26	13	24	Sudan				A. L. Butler.
$25\frac{1}{2}$	II $\frac{1}{2}$	171/2	Algeria				Hon. John Ward.
$25\frac{1}{2}$	I I ½	17	Do.				F. de Murietta.
$25\frac{1}{2}$	10§	16	Do.				Col. G. J. Cuthbert.
24 ³ / ₄	10 7	16	Tunisia				Capt. W. W. Pitt-Taylor.
$24\frac{3}{4}$	II $\frac{1}{2}$	$17\frac{1}{2}$	Algeria				E. Richardson Cox.
24 ³ / ₄	I I 5	183	Do.				H. G. Watson.
$24\frac{1}{4}$	$12\frac{1}{4}$	171	Dongola				O. Atkey.
$23\frac{1}{4}$	$10\frac{1}{2}$	17	Tunis				C. Trevor Wingfield.
22 ³ / ₄	$10\frac{1}{4}$	$22\frac{1}{4}$	Algeria				F. M. Bailey.
22 5	111	141	Tunisia			,	Capt. J. B. Jenkinson.
$22\frac{1}{2}$	ΙΙ	141	Algeria				Hon. Walter Rothschild.
$22\frac{1}{2}$	12	163	Dongola				Capt. W. H. Wilkin.
♀ 2 2	11 <u>3</u>	151	Dongola				O. Atkey.
22	111	16	Red Sea I	Littora	1		R. Wavell-Paxton.
211	$10\frac{1}{4}$	$18\frac{1}{2}$	Do				Capt. S. S. Flower.
211	103	${\rm I}7\tfrac{1}{2}$	Do				Capt. the Hon. G. H. Douglas- Pennant.
21	101	15½	Do				G. C. Whitaker.
21	111	$18\frac{1}{2}$	W. of Do	ngola			Earl of Kingston.
		OW	NER'S M	EASU	JRE:	ΜE	NTS.
28	$11\frac{1}{2}$	$16\frac{1}{2}$	S. Tunisia	1.			J. I. S. Whitaker.
27 ³ / ₄	II.‡	1416	Algeria				Viscount Edmond de Poncins.
$27\frac{1}{2}$	I25	138		?			Imperial Museum, Vienna.
♀ 20 <u>1</u>	10	16	Algeria				A. E. Pease.



Skull and Horns of Rocky Mountain Bighorn.

The BIGHORN SHEEP (Ovis canadensis).

The bighorn of the American continent, inclusive of its local races, is a large sheep, distinguished from the Asiatic argalis, among other features, by the comparative smoothness of the horns, in which the outer front angle is prominent and the inner one rounded off, and also by the smaller size of the face-glands. There is a well-marked whitish patch on the rump, but the amount of white on the under-parts and legs shows considerable local variation. In the typical Rocky Mountain race (O. canadensis typica) the ears are long and pointed, with short hair, and the horns, which are very heavy, diverge but little outwards, and generally have the tips broken. The Californian O. canadensis nelsoni is a paler southern race. In O. canadensis stonei of the North-West Territories the colour of the back is very dark, and the white on the hind part of the belly and legs sharply defined. Both in this race and the white O. canadensis dalli of Alaska the horns are lighter, more divergent, and more sharply pointed, while the ears tend to become shorter, blunter, and more hairy. The grey O. c. fannini tends to connect stonei with dalli, and as a matter of fact all three intergrade. Height at shoulder, about 3 feet 2 inches. Weight, about 350 lbs. Numerous other American races have been named.

The horns of the ewes are very small in comparison with those of the rams, seldom measuring more than 15 inches on the curve from base

to tip. Large male horns are now difficult to obtain, and of late years it is seldom that those of fresh-killed specimens are seen exceeding 38 inches on the curve from tip to tip.

Distribution.—The range of the American representatives of the bighorn extends from the Rocky Mountains southwards to Sonora, Northern Mexico, and California, and northwards to Alaska and the shores of Bering Sea. On the Asiatic side of Bering Strait the species is represented by two, or perhaps three, races nearly allied to the northern New World forms.

A.—ROCKY MOUNTAIN BIGHORN (O. canadensis typica).

Specimens referable to some of the allied American races are included in this list.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.			Owner.
42	16		Wyoming .			T. W. H. Clarke.
41	17	14	Alberta			G. L. Harrison.
40 3	$16\frac{1}{2}$	***	Yellowstone .			British Museum.
401	154	$20\frac{1}{4}$?			Sir Edmund G. Loder, Bart.
40	15	$21\frac{1}{2}$	British Columbia			J. W. R. Young.
395	15 ³ / ₈		Colorado .			St. George Littledale.
$39\frac{1}{2}$	$16\frac{1}{2}$	$24\frac{3}{4}$	Montana .			British Museum.
$39\frac{1}{2}$	$15\frac{1}{2}$	19	?			Sir Edmund G. Loder, Bart.
$39\frac{1}{2}$	14	211	Mexico			R. O. Crewe Read.
$38\frac{3}{8}$	$15\frac{1}{2}$	22	?			Gerald Buxton.
384	16 3		Bighorn Mountains			Sir H. Seton-Karr.
384	I 5 ½	194	Montana			Edmund Littledale.
38‡	16	19	N.W. Territories			S. Ratcliff.
38	17		Alberta, N.W.T.			Arnold Pike.
38	18	21	5			Hon. Walter Rothschild.
374	$15\frac{7}{8}$	238	Mexico			J. A. H. Drought.
$37\frac{1}{2}$	I 5 ½	18	Do			I. N. Dracopoli.
$37\frac{1}{2}$	$16\frac{1}{4}$	$32\frac{1}{2}$	Californian Baja, M	lexic	ю.	L. J. Cadbury.
$37\frac{1}{2}$	16	15	British Columbia			Col. A. Charlesworth.
371	$15\frac{1}{2}$	16	Do.			J. Turner-Turner.
37	161		Montana			Major Maitland Kirwan.
37	16 <u>5</u>	16	British Columbia			R. H. Venables Kyrke.
37	15‡	$19\frac{1}{2}$	Wyoming .			H. A. C. Darley.
37	152	$18\frac{1}{2}$	Do			Lord Rodney.
36≩	19	15	British Columbia			C. H. Kennard.
363	151	$22\frac{1}{2}$	Wyoming .			Earl of Lonsdale.
363	$14\frac{1}{2}$	$22\frac{1}{2}$	Do			A. Willis.
361	16	15	Do			W. F. Wailes-Fairbairn.
36½	14		?			J. D. Cobbold.
36½	154	192	?			Capt. C. R. E. Radclyffe.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.			Owner.
364	144	18	British Columbia			Capt. W. A. Armitage.
36	15	9	Wyoming .			J. L. Scarlett.
36	143	16½	Montana			R. H. Sawyer.
36	143	16	Wyoming .			Major G. Dalrymple White.
$35\frac{3}{4}$	$15\frac{1}{4}$	20	Mexico		. •	R. F. Glyn.
353	13 3	I 7 ½	British Columbia			Hon. S. Tollemache.
$35\frac{1}{2}$	16	21	Do.			T. P. Kempson.
35‡	151	$18\frac{1}{2}$	Do.			Sir Peter Walker, Bart.
354	$16\frac{1}{4}$	17	Do.			L. Ardern.
351	16	12	Do.			G. C. Whitaker.
♀ 10½	$5\frac{1}{2}$	13	Do.			A. Neilson.
$44\frac{1}{2}$	17	21	NER'S MEASUR Near Golden, B.C.			Madison Grant.
$44\frac{1}{2}$	17	21	Near Golden, B.C.			Madison Grant.
43 ¹ / ₈	163	/18½	British Columbia			Wilson Potter.
43	$18\frac{1}{4}$?			H. E. Knobel.
42½	164	$25\frac{3}{4}$	Lower California			American National Collection.
$42\frac{1}{2}$	16 3	$14\frac{1}{2}$	Do.			S. E. White.
$42\frac{1}{2}$	164	$25\frac{3}{4}$	Do.			G. H. Gould.
42	16		Do.			Capt. E. H. Funke.
	17½		Wyoming .			T. W. H. Clarke.
$41\frac{3}{4}$	$17\frac{1}{2}$	19	Rocky Mountains			N. J. Dinnen.
411	15		Kootenay, B.C.			Provincial Museum, B.C.
$40\frac{1}{2}$	16½	17	S.E. of British Col	lumb	ia.	American National Collection.
40	$15\frac{1}{2}$	$25\frac{1}{2}$	Lower California			J. C. Phillips.
40	16½		Do.			W. Kent.
1	7		3.5 1			0 7 77 1



Mexico . . .

. G. L. Harrison.

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39‡

Head of White Bighorn. Shot by Lieut. R. C. Dalglish, R.N.

B.—WHITE BIGHORN (O. canadensis dalli).

Length on front curve.	Circum- ference.	Tip to Tip.	1	Locali	ity.		Owner.
47	134	28	Yukon				Lieut. R. C. Dalglish, R.N.
$43\frac{1}{2}$	$15\frac{1}{2}$	26	Alaska				His Majesty the King.
431	141	273	Do.				H. B. Alexander.
43	$13\frac{1}{2}$	$27\frac{1}{4}$	Do.				Hon. Walter Rothschild.
41	14	234	Do.				Hon. M. Egerton.
$40\frac{3}{4}$	$12\frac{1}{4}$	$27\frac{1}{2}$	Do.				F. T. Colby.
40	14	$28\frac{1}{2}$	Do.				J. Todd.
39	13₹	$23\frac{1}{2}$	Yukon				S. R. Vereker.
381	$\mathbf{I} 2 \frac{1}{2}$	211	Alaska				P. B. Vander Byl.
38	13‡	18	Do.	٠			A. E. Butter.
$37\frac{3}{4}$	$15\frac{1}{2}$	29½	Yukon				Surg. C. R. Rickard, R.N.
$37\frac{1}{4}$	13 ³ / ₄	2 I 1/4	Alaska				Lord Elphinstone.
37	13 3	$20\frac{1}{2}$	Do.				Hon. J. C. Lister.
$36\frac{1}{2}$	131	***	Do.				Sir A. Armstrong, Bart.
36 1	13	18	Do.	٠			R. F. Glyn.
36	$14\frac{1}{2}$	17 3	Do.				C. G. Cowan.
36	$12\frac{1}{2}$	18	Do.				Capt. C. R. E. Radclyffe.
		OW	NER'S	ME	ASUF	REM	ENTS.
491	$14\frac{1}{2}$	29 ³ 4	Yukon				Major A. L. Snyder.
44 ³ / ₄	$14\frac{3}{4}$	$34\frac{1}{2}$	Do.				Wilson Potter.
418	141	2 9	Do.				American National Collection.
411	$I2\frac{1}{2}$. 28½	Do.				J. C. Phillips.
$40\frac{1}{2}$	${\tt I} {\tt 3}\tfrac{1}{2}$	$27\frac{1}{2}$	Do.				H. Disston.

C.—GREY BIGHORN (O. canadensis fannini).

A race characterised by the grey colour of the back.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.		Owner.
$42\frac{1}{2}$	14	294	Yukon		Hon. M. Egerton.
$-40\frac{1}{2}$	13	20	Near Dawson (City .	Provincial Museum, B.C.
37	135	184	Yukon		Hon. Walter Rothschild.
354	14	24 ³ / ₄	Do. , .		W. H. Bell.
35‡	134	24]	?		K. K. Horn.
99	$5\frac{1}{2}$	$9\frac{1}{2}$	Do ,		Prince Colloredo Mannsfeld.

⁻ Owner's measurements.



Head of Black Bighorn. Shot by Major J. F. Church.

D.—BLACK BIGHORN (O. canadensis stonei).

Lengt front of		Circum- ference.	Tip to Tip.		Localit	y.		Owner.
42	2	$14\frac{1}{4}$	28	Cassiar				M. W. Ward.
41	ī	14	$28\frac{1}{2}$	Do.				Viscount Lascelles.
40	$0\frac{3}{4}$	134	25	Do.				Lord Hindlip.
40)	15	241/2	Do.				C. H. Young.
40		14		Do.	٠			C. D. Butler.
40		123	$2I\frac{1}{2}$	Do.				Major J. F. Church.
39	$9\frac{1}{2}$	$12\frac{1}{2}$	$27\frac{1}{2}$	Do.				Col. H. Appleton.
39)	131	$22\frac{3}{4}$	Do.				K. K. Horn.
39	9	$14\frac{1}{2}$	23 ¹ / ₄	Do.				Capt. The Hon. G. H. Douglas-
3	$7\frac{1}{2}$	13 3	23	Do.				Pennant. W. M. Tangye.
3	74	$13\frac{1}{2}$	$18\frac{1}{2}$	Do.				R. Hayne.
3	53	141	24	Do.				R. Beaumont.
31	$5\frac{3}{4}$	$12\frac{1}{2}$	21 ¹ / ₄	Do.				British Museum (J. M. Hanbury).
			OV	VNER'S	MEA	SUI	REM	ENTS.
4	4	14	25	Cassiar				Col. Max C. Fleischmann.
4	$3\frac{1}{4}$	143	30	Do.				Wilson Potter.
4	3	I 4½	30	Do.				J. C. Phillips.
4	I 1/2	14	29	Do.				C. F. Collins.
3	81	I 3\frac{3}{4}	19	Do.				P. N. Graham.
3	6	$13\frac{1}{2}$	23 ³ / ₄	Do.				Count C. Hoyos.



Skull and Horns of Kamchatkan Bighorn. Shot by Prince E. Demidoff.

E.—KAMCHATKAN BIGHORN (O. canadensis nivicola).

Although the Kamchatkan wild sheep is readily distinguished from the Rocky Mountain bighorn (O. canadensis typica) by the slenderness of the horns at the points, and their wider tip-to-tip measurement as well as by the shorter, blunter, and more thickly haired ears, the shorter face, the longer hair of the body, and the inferior size of the white patch on the rump, yet the white Alaskan and the black bighorn, in which the horns are of the Kamchatkan type, and the ears are shorter than in the Rocky Mountain race, tend to bridge over these points of difference. These transitions indicate that all the bighorns are essentially local modifications of the same animal; the Asiatic forms being, as might be expected, the most aberrant. Height at shoulder, about 37 or 38 inches; weight, about 250 lbs.

Distribution.—Kamchatka.

Length on front curve.	Circum- ference.	Tip to Tip.	Loca	lity.		Owner.	
39‡	142	281	Kamchatka				Prince E. Demidoff.
383	$14\frac{1}{2}$	308	Do.				Do.
-38	13½	26	Do.				Dr. F. H. H. Guillemard.
354	131	24	Do.				P. Niedieck.

⁻ Owner's measurements.

Length on front curve.	Circum- ference.	Tip to Tip.	Loca	lity.		Owner.
$35\frac{1}{2}$	$14\frac{1}{2}$	$24\frac{3}{4}$	Kamchatka			St. Petersburg Museum.
35 ¹ / ₄	144	$24\frac{1}{2}$	Do.			British Museum (St. George Littledale).
35	13 ⁵ / ₈	24	Do.			*** (1 'F)
343	$14\frac{1}{2}$	$25\frac{1}{2}$	Do.			St. George Littledale.
34	13½	23 5	Do.			Hon. Walter Rothschild.
33	13 3	22	Do.			Capt. C. R. E. Radclyffe.
32 3	$13\frac{1}{2}$	23	Do.			Sir Edmund G. Loder, Bart.
♀ 10 <u>3</u>	5	$14\frac{1}{2}$	Do.			Hon. Walter Rothschild.

F.—CLIFTON'S BIGHORN (O. canadensis borealis).

An East Siberian race closely allied to the last, but of a generally lighter colour, with a much larger and less well-defined white rump-patch, more white on the face, a darker tail, and larger ears.

Distribution.—The Stanovoi Mountains, the range between the valleys of the Yana and Lena, and other parts of Eastern Siberia. The only known examples in England were shot by Mr. J. Talbot Clifton, by whom a male was presented to the British Museum in 1902.

Length on front curve.	Circum- ference.	Tip to Tip.	Local	ity.		Owner.
$37\frac{1}{2}$	II	$22\frac{1}{4}$	Yana Valley			J. Talbot Clifton.
33	13	$22\frac{1}{2}$	Do.			British Museum (J. Talbot Clifton).
$32\frac{3}{4}$	II $\frac{1}{2}$	$24\frac{1}{2}$	Do.			J. Talbot Clifton.
9 5½	35	$5\frac{1}{2}$	Do.		-	Do.

The ARGALI SHEEP (Ovis ammon).

In common with the following members of the genus *Ovis*, this splendid sheep has the transverse wrinklings of the horns well developed, and glands present on the face, with pits for their reception in the skull. In the present species the horns of the adult rams are characterised by their large size, massiveness, and the outward direction of their tips. The hind-quarters often show a large amount of white, extending on to the thighs; and the throat may be furnished with a voluminous ruff of long white hairs, which may or may not disappear in summer. Height at shoulder reaching in some races to about 4 feet; weight of adult male about 22 stone.

Regarding all forms of big Central Asiatic sheep, or argalis, as races of a single species, they may be classified as follows:—(1) The Tibetan race, Ovis ammon hodgsoni, of Tibet, with thick, massive horns, which do not form more than one complete circle, and have a maximum length of from $48\frac{1}{9}$ inches to 57 inches, and a girth of from 17 inches to 19 inches; (2) O. a. mongolica, of Mongolia, nearly allied to the last; (3) O. a. typica, of the Altai, with the massive horns forming more than a complete circle, rounded in front, approximated to the sides of the face, and having a maximum length of from 50 inches to 62 inches, and a girth of from 18 inches to 20 inches; (4) O. a. storcki, of south-eastern Kamchatka, distinguished by its small size; (5) O. a. sairensis, from the Saiar Mountains, with small but relatively massive horns, measuring from about $45\frac{1}{2}$ inches to 47 inches in length, and $14\frac{1}{9}$ inches to $15\frac{1}{9}$ inches in girth; (6) O. a. karelini, of the Alatau, with a small rump-patch, and the horns more angulated in front than in O. a. typica, diverging more from the sides of the face, and having a maximum length ranging from $45\frac{1}{9}$ inches to $49\frac{1}{9}$ inches, and a girth of about 16 inches; (7) O. a. humei, of the Tien Shan N.-W. of Kashgar, nearly allied to the preceding, but with a larger rump-patch and other slight colour-differences, and outer angle of horns often rounded; (8) O. a. littledalei, of the Kulja district of the Tien Shan, with a rufous (instead of grey) colouring and no rumppatch, and long, thin horns, of which the maximum length ranges from 55 inches to 58 inches, with a girth of 17 inches or a fraction more; (9) O. a. nigrimontana, a small outlying race from the Karatau of Bokhara, allied to littledalei; (10) O. a. poli, of the Pamir, in which the horns are narrower and longer than in any of the other races, forming much more than one complete circle, with the front surface markedly angulated, and the maximum length ranging from 69 inches to 75 inches, and the girth from $14\frac{1}{9}$ inches to 16 inches, or, rarely, 17 inches.

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Although the gradation in horn-characters may not be absolutely complete from the *hodgsoni* to the *poli* type, it is sufficiently well marked to justify the view here taken of the mutual relationships of these wild sheep.

It cannot be guaranteed that all the undermentioned specimens are correctly classified.

Distribution.—The Highlands of Central Asia, from Bokhara to Mongolia; also Kamchatka.



Head of Tibetan Argali.

A.—TIBETAN ARGALI (O. ammon hodgsoni).

Chiefly distinguished from the Siberian argali by the development of a distinct white ruff on the throat of the males, which appears to persist in summer, and also by the less degree of lateral expansion of the horns, which do not form more than a single complete circle, are not "nipped in" below the eyes, and generally broken at the tips. The wrinkles on the horns are perhaps somewhat less prominent, and the outer front angle is frequently well developed.

The height at the shoulder is apparently rather less than in the typical argali. A ram shot by Lieut.-Col. Greenaway measured 76 inches from the nose to the tip of the tail, and weighed about 212 lbs. In another ram, whose age was estimated at 10 years, the height at the

shoulder was 43 inches, the girth 50 inches, and the weight 205 lbs. (Major Powell-Cotton).

Distribution.—The plateau of Tibet, from Northern Ladak to the districts north of Sikhim, and northwards to the Kuenluen; eastern limits unknown.

Length on front curve.	Circum- ference.	Tip to Tip.		Locality.			Owner.
57	183	29	Tibet .				Arnold Pike.
50½	181	19	Pangong	g Lake			Sir Edmund G. Loder, Bart.
$49\frac{1}{2}$	19	$21\frac{1}{4}$	Tibet .				Capt. F. M. Bailey.
48	16	23	Rudok				Major G. A. L. Carew.
48	182	20	Ladak				LieutCol. H. C. Morland.
48	18	31	Do.				LieutCol. Hon. A. Dalzell.
471	163	24	Do.				K. C. Zarzhetsky.
47	17	271		?			Col. H. Appleton.
$46\frac{1}{2}$	193	20	Ladak				British Museum (Hume Collection).
$46\frac{1}{2}$	163		Do.				LieutCol. H. M. Biddulph.
46	16	17		3			Hon. R. A. Ward.
$45\frac{1}{2}$	164	17		?			Duke of Teck.
$45\frac{1}{2}$	174	19		5			C. P. Radclyffe.
$45\frac{1}{4}$	171	172		?			Capt. R. S. Kennedy.
454	182	$19\frac{1}{2}$?			C. E. Bryant.
45	17	16	Ladak				J. V. Phelps.
45	16	19½	Do.				P. F. Hadow.
45	17	$22\frac{3}{4}$	Do.				Col. C. B. Wood.
$44\frac{1}{2}$	171	19	Do.				W. A. Conduitt.
$44\frac{1}{2}$	17	22		?			Major F. G. T. Deshon.
44	1 6	$17\frac{1}{2}$	Ladak	,			Duke of Bedford.
44	16	$17\frac{1}{2}$	Do.				W. R. Lawrence.
44	17	182	Do.	٠	٠	٠	Major C. MacI. Ritchie.
		OW	NER'S	MEAS	URE	ME	NTS.
50	17		Tibet .				Major W. H. Lane.
49 ³ / ₄	18		Ladak				Capt. G. W. S. Sherlock.
$49\frac{1}{2}$	18		Tibet				G. Burrard.
$48\frac{1}{2}$	19		Do.				E. Howard Brooke.
48	181		Do.				Col. T. K. E. Johnston.
47	$17\frac{1}{2}$	18		?			LieutCol. G. W. Brazier-Creagh.
$^{1}46\frac{1}{2}$	16½	21	Do.				Major P. H. G. Powell-Cotton.
46	19			?			Major C. S. Cumberland.

¹ Picked up.



Head of Siberian Argali. Shot by Mr. J. H. Miller in the Altai.

B.—SIBERIAN ARGALI (O. ammon typica).

A more or less distinct white patch on the rump, not extending on to the thigh, which is dark-coloured like the back; no ruff on the throat, even in the long winter-coat. In summer the coat of old males, which is very short, tends to become more or less light-coloured all over. Height at shoulder, from about 45 inches to 4 feet; weight, from about 250 to 350 lbs. As in the Tibetan race, considerable individual variation may be noticed in the horns, some having the outer front angle much more developed than usual; it does not appear that these differences can be accounted for by age.

Distribution.—In former times apparently extending from the Baikal Mountains to the Altai; now chiefly restricted to the latter area.

Length on front curve.	Circum- ference.	Tip to Tip.		Locality.		Owner.
621	193	384	Altai			St. George Littledale.
621	194	$41\frac{1}{2}$	Do.			Col. C. B. Wood.
62	19	$38\frac{3}{4}$	Do.			H. J. Elwes.
611/2	$20\frac{1}{2}$	$37\frac{1}{2}$	Do.			J. H. Miller. (See illustration.)
$61\frac{1}{2}$	194	$39\frac{1}{4}$	Do.			British Museum (St. George Littledale).

Length on front curve.	Circum- ference.	Tip to Tip.		Locality.		Owner.
60	20	41	Altai .			Lord Elphinstone.
$59\frac{1}{2}$	2 I $\frac{t}{2}$	422	Do			T. P. Miller.
59½	20	$4I\frac{1}{2}$	Do			Hon. Walter Rothschild.
59 ¹ 8	19§	38‡	Do			St. George Littledale.
-59 1	$19\frac{1}{2}$	40	Do			American National Collection.
59	18	36‡	Do			H. W. Seton-Karr.
59	19	$37\frac{1}{2}$	Do	٠		Ford G. Barclay.
$56\frac{1}{2}$	$18\frac{1}{2}$	$33\frac{1}{2}$	Do			Major C. S. Cumberland.
56	$18\frac{1}{2}$	35	Do			British Museum.
56	174	33	Do			E. W. Dixon.
554	$18\frac{1}{2}$	36 1	Do			Count E. Hoyos.
55	18	39	Do			Prince E. Demidoff.
55	193	$34\frac{3}{4}$	Do			D. Carruthers.
55	19½	39	Do			Col. Max C. Fleischmann.
54½	19	33	Do			R. Hayne.
54 ¹ / ₄	18	$33\frac{1}{2}$	Do			Lord Osborne Beauclerk.
$53\frac{1}{4}$	$21\frac{3}{4}$	$33\frac{1}{2}$	Do	٠		Duke of Bedford.
531	19	22	Do			St. George Littledale.
53	18	39	Do			W. E. Pease.
$52\frac{1}{2}$	$19\frac{1}{2}$	39	Do			J. R. Bradley.
52	21	301/2	Do			P. B. Vander Byl.
- 9 26	7‡	23 ³ / ₄	Do			Berlin Museum.

⁻ Owner's measurements.

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Mongolian Argali (O. a. mongolica). Shot by Col. J. H. Abbot Anderson.

C.—MONGOLIAN ARGALI (O. ammon mongolica).

Allied to the Tibetan race, having a distinct yellowish-white throat-ruff, but apparently less massive horns, in which the outer front angles may be much rounded off. The white on the buttocks and hind surface of legs more abundant and purer in colour.

Distribution.—Eastern Mongolia and Manchuria to the north of Pekin.

Length on front curve.	Circum- ference.	Tip to Tip.	Localit	ty.	Owner.
502	18	29	N. Shan-si, S.	Manchuria	Col. J. H. Abbot Anderson.
49	$16\frac{1}{2}$	25	S. Mongolia		H. Fowler.
47	16 <u>3</u>	$25\frac{1}{2}$	Do.		G. N. Atkinson.
44 3	$16\frac{1}{2}$	23	Manchuria .		H.R.H. Henri de Bourbon, Comte de Bardi.
41	171	$19\frac{1}{2}$	N. Shan-si		Major Sir T. S. Tancred, Bart.
41	17‡	$24\frac{1}{2}$	Do.		M. G. Brisker.

D.—SAIAR ARGALI (O. ammon sairensis).

This rather small sheep is in some respects intermediate between *poli* and *ammon*, but differs from both in having the face brown above and white on the muzzle. The horns are less finely ridged than those of *ammon* and form a longer spiral.

Distribution.—The Saiar or Sair Mountains.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.	Owner.		
$47\frac{1}{2}$	$15\frac{1}{2}$	27	Saiar Mountains	British Museum (St. George Littledale. Type).		
-47	151	30	Do	American National Collection.		
¹ 46‡	141	27	Irtish District .	Hon. Walter Rothschild.		
46	131	$27\frac{3}{4}$	Saiar Mountains	J. C. Phillips.		
140	148	$29\frac{1}{2}$	Nr. Sairam Nor	Lord Elphinstone.		

E.—ALATAU ARGALI (O. ammon karelini).

Rump-patch smaller than in next race; horn characters mentioned under head of species.

Distribution.—Typically the Alatau and adjacent parts of Altai.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.	Owner.
53	162	331	Alatau Mountains	J. H. Miller.
$49\frac{1}{2}$	161	$25\frac{1}{2}$	Do.	Sir Edmund G. Loder, Bart.
$45\frac{1}{2}$	144	34	Do.	Do.

F.—KASHGARIAN ARGALI (O. ammon humei).

General colour in winter greyish, with a ruff and large rump-patch.

Distribution.—Tien Shan, north-west of Kashgar.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.	Owner.
47	131	40	NW. of Kashgar	. British Museum (co-type; Hume Collection).

G.-LITTLEDALE'S ARGALI (O. ammon littledalei).

General colour in winter rufous, with a yellowish ruff but no rump-patch.

Larger than *sairensis*, with the same brown forehead and white muzzle, but the ears smaller and rather farther away from the horns, and the latter less "nipped in" below the eyes than in the typical argali, and showing more of their inner surfaces in a front view. This is a "thin-horned" sheep.

Distribution.—Typically the east end of the Tien Shan, to the south-east of Kulja, or Ili.

⁻ Owner's measurements.

¹ Determination provisional.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.				Owner.		
58	17	413	Tien Shar	ı.			A. Bayley-Worthington.		
58	151	$40\frac{1}{2}$	Do.				W. R. Read.		
574	172	41	Do.	٠			Major A. D. Greenhill Gardyne.		
$55\frac{1}{2}$	15	45	Do.				Col. H. Appleton.		
$55\frac{1}{2}$	164	35≩	Do.				Capt. J. N. Price Wood.		
55‡	16	37	Do				LieutCol. G. E. Pereira.		
55	18	43	Do.				Col. H. Appleton.		
55	16	44	Do.				H.R.H. the Duc d'Orléans.		
55	16	43	Do.				Lord Osborne Beauclerk.		
54 ¹ / ₄	14_{4}^{3}	$36\frac{3}{4}$	Do.				T. P. Miller.		
541	16	34	Do.				A. W. Berg.		
53 ²	$15\frac{1}{2}$	38	Do.			, .	C. H. Bury.		
$53\frac{1}{2}$	17	411	Do.			:	B. Chew.		
53 ¹ / ₄	$15\frac{1}{2}$	$40\frac{1}{2}$	Do.				H. Whitaker.		
52	154	42 3	Do.				J. H. Miller.		
$51\frac{1}{2}$	17	$4I\frac{1}{2}$	Do.				St. George Littledale.		
51	$16\frac{1}{2}$	39	Do.				British Museum (St. George Littledale. Type).		



Bokharan Argali.

H.—BOKHARAN ARGALI (O. ammon nigrimontana).

The characters of this race are given under the heading of the species.

Distribution.—The Karatau (Black Mountain) of Bokhara, Russian
Turkestan.

Length on front curve.	Circum- ference.	Tip to Tip.		Locality.		Owner.	
35 ³	$10\frac{1}{2}$	24	Bokhara			D. Carruthers.	(See illustration.)
33	$10\frac{1}{2}$	$21\frac{3}{4}$	Do.			Sir Edmund G.	Loder, Bart.



Skull and horns of Marco Polo's Argali. Sir Edmund G. Loder's specimen.

I. -PAMIR or MARCO POLO'S ARGALI (O. ammon poli).

Distribution.—The Pamir plateau, extending to Hunza. This argali was first definitely made known in England by specimens obtained during the Second Yarkand Mission under the late Sir D. Forsyth during the years 1873 and 1874; since which date it has been killed by Mr. St. George Littledale, Major C. S. Cumberland, Col. H. Bower, Viscount de Poncins, and other sportsmen.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.	Owner.
704	$15\frac{3}{8}$	$44\frac{3}{4}$	Yuldez	G. L. Harrison. (See illustration, page 405.)
70	142	45	Do	His Majesty The King.
70	17	52	Do	H.H. the Maharaja of Cooch-
692	151	56	?	Marquis of Lansdowne.
69½	I4½	39	Tagdumbash .	Sir Edmund G. Loder, Bart. (See illustration.)
68\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	15	502	?	H. J. Elwes.
681	15	354	:	Lewis Flower.
68	17	43	Pamir	LieutGen. Sir R. Pole-Carew.
67	155	421	:	Duke of Westminster.
663	155	46	Tagdumbash	Sir Edmund G. Loder, Bart.
667	135	$46\frac{1}{2}$	Valley between Little and Great Pamir	British Museum (Hume Collection).
66	154	44	Do.	Do.
66	157	42	?	A. Leslie Renton.
$65\frac{1}{2}$	16	53	Great Pamir (16,000 feet) .	British Museum (the late Gen. Sir T. E. Gordon).



Skull and horns of Ovis poli in the collection of Mr. George L. Harrison.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.		Owner.
65	$16\frac{1}{2}$	$49\frac{1}{2}$?		Col. C. F. Blane.
$64\frac{1}{2}$	161	46	Pamir .		Major C. C. Ellis.
641	$16\frac{1}{2}$	41	Do		W. Lawrence.
641	151	39	Do		H. C. V. Hunter.
64	$15\frac{1}{2}$	50	Little Pamir		Major R. P. Cobbold.
64	15	39	Do.		A. Ezra.
64	15	49	3		Duke of Portland.
635	16 ¹	$42\frac{1}{2}$	Pamir .		Hon. Walter Rothschild.
63	148	$32\frac{1}{4}$	Do		Col. G. D. F. Sulivan.
63	16	$49\frac{1}{2}$	Little Pamir		Bachelors' Club (Major R. P. Cobbold).
$62\frac{3}{4}$	161	51	Tagdumbash		Capt. T. W. Greenfield.
621	15	57	Do.		Sir Edmund G. Loder, Bart.
62	$15\frac{1}{2}$	$46\frac{1}{2}$	Do.		G. L. Harrison.
62	$14\frac{1}{2}$	$43\frac{1}{2}$	Do.		L. C. Sanford.
$61\frac{1}{2}$	$15\frac{1}{2}$	$46\frac{1}{4}$	Do.		E. L. Phelps.
60 <u>3</u>	154	46 g	Pamir .		St. George Littledale.
60	154	46 3	Tagdumbash		Capt. T. W. Greenfield.
60	152	46	Do.		P. Church.
60	154	43	Do.		J. C. Phillips.
$59\frac{1}{4}$	16	46	Do.		Capt. H. H. P. Deasy.
59	I 5½	40	Do.		Lord-Curzon of Kedleston.
59	154	4 I	?		Martyn Kennard.
59	162	441	?		R. F. Glyn.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.			Owner.
57 3	154	47	Pamir			H. M. von Archer.
57½	$16\frac{1}{4}$	48	}			J. Forbes Crombie.
57½	148	431	?			Col. C. B. Wood.
57	14 ³	$4S\frac{1}{2}$	Russian Pamir .			Col. H. Appleton.
57	154	42	Tagdumbash .			Hon. R. A. Ward.
$56\frac{7}{8}$	15%	35½	Do			St. George Littledale.
561	163	$49\frac{1}{2}$	Do			C. C. Tower.
56	14	453	5			LieutCol. J. Manners Smith.
56	$15\frac{1}{2}$	$43\frac{1}{2}$	Pamir			Col. A. H. Hussey.
56	$14\frac{1}{2}$	43	5			W. O. Bell-Irving.
55 §	$16\frac{1}{2}$	43	Pamir			Major C. S. Cumberland.
$55\frac{1}{2}$	$16\frac{3}{4}$	40	;			P. Radclyffe.
55½	16‡	$46\frac{1}{2}$	Pamir			P. F. Hadow.
$54\frac{1}{2}$	163	$39\frac{1}{2}$	Do			H.R.H. Prince Pierre d'Orléans
54½	147	$43\frac{1}{2}$	Do			and Braganza. Major J. B. Mackintosh.
53 ^{3/4}	$16\frac{1}{2}$	$44\frac{1}{2}$	Do			K. V. Painter.
53½	$14\frac{3}{4}$	$38\frac{3}{4}$	N. Pamir			R. Hayne.
			OWNER'S MEAS	URE	ME	NTS.
75	16	54½	Pamir			Field-Marshal Earl Roberts.
73	15	48	Little Pamir .			The late Col. H. C. B. Tanner.
71	$15\frac{1}{2}$	534	Great Pamir .			Viscount Edmond de Poncins.
$68\frac{1}{2}$	154	$45\frac{3}{4}$	Do			Mess of the Queen's Own Corps of
68	16	52	?			Guides. Indian Museum.
678	16	534	?			Indian Museum (Col. J. Biddulph).
67	16		?			H.H. the Maharaja of Travancore.
65	16	41	?			Dublin Museum.
63	15	544	3			R.E. Mess, Roorkee.
61	15	48	Killik ['] Pass, Gilgit			F. M. Hodgkins.
♀ 4 ₁ ⁷ ₀	5 1 9	15%	Great Pamir .			Viscount Edmond de Poncins.

URIAL 407



Head of Shapo or Ladak Urial.

The URIAL or SHAPO (Ovis vignei).

A much smaller sheep than most of the Asiatic argalis, with comparatively slender and well-wrinkled horns of considerable length, which when fully developed curve forwards along the sides of the face; the males with a more or less developed mainly whitish ruff on the throat. General colour varying from rufous brown to grey in summer, with the chest, under-parts, and portions of the legs white, and sometimes blackish "points." Females with small horns. Height at shoulder, about 32 inches; weight, about 120 lbs.

Distribution.—From Ladak and Zanskar to Russian Turkestan, Transcaspia, Afghanistan, Baluchistan, Southern Persia, the North-West Frontier of India, the Punjab Salt-Range, and Sind. Four local races, two of which probably intergrade in the Indus valley, are recognised:—The typical urin of Astor, the sha or shapo of Ladak (O. vignei typica) with much black in the ruff; the Afghan urial (O. v. cycloceros) of Afghanistan, Baluchistan, and the Trans-Indus districts, in which the points of the horns tend to turn up, and the front angles may be knotted; the Punjab urial (O. v. punjabiensis) of the Cis-Indus Punjab, in which the size is less, the colour redder, the ruff much developed, and the horns form a close-coiled spiral; the Kopet-Dagh urial (O. v. arkal) of the Ust-Urz plateau and the Kopet-Dagh and Alag-Dagh, in which the front of the horns is much flattened, with the two angles very pronounced, and the ruff wholly white in front, the general colour being rufous.

A.—SHAPO or LADAK URIAL (O. vignei typica).

Length on front curve.	Circum- ference.	Tip to Tip.	L	ocality	y.		Owner.
39	114	${\tt I} {\tt 5}{}^{\frac{1}{2}}$		5			MajGen. Sir H. S. Rawlinson, Bart.
385	121	111		?			J. Carr Saunders.
$38\frac{1}{2}$	I I 1/4	$8\frac{1}{2}$	Near Leh				E. L. Phelps.
361	$II\frac{1}{2}$	41	Do.				British Museum (Hume Collection).
36‡	105	115	Baltistan				Major Sir T. A. Salt, Bart.
34 ³ / ₈	11			3			East India Club.
$33\frac{1}{4}$	12	12	Ladak .				Arnold Pike.
33	II	${\rm I}7\tfrac{1}{2}$	Do				P. F. Hadow.
33	10^{1}_{2}	15	Do				Major F. W. H. Walshe.
$32\frac{1}{2}$	$9\frac{1}{2}$	131	Do				Capt. H. R. P. Dickson.
$32\frac{1}{4}$	10	ΙΙ	Do				Capt. D. L. R. Lorimer.
32	$10\frac{3}{4}$	133	Chitral .				Capt. B. A. R. Blewitt.
314	$10\frac{1}{4}$	14	Ladak .				Capt. L. Trevor Goff.
31 4	$10\frac{1}{4}$	7	Do				Col. F. C. Lister-Kay.
$31\frac{1}{2}$	10	15	Gilgit .				LieutCol. B. E. M. Gurdon.
31½	101	$13\frac{1}{2}$	Do				Capt. B. H. Shaw-Stewart.
31½	ΙI	91		:			Major F. W. Wormald.
31	ΙΙ		Do				J. D. Cobbold.
31	11‡	12	Ladak .				N. C. Cockburn.
$30\frac{1}{2}$	81	19	Gilgit .				Capt. K. Dingwall.
301	9‡	$6\frac{1}{4}$	Chitral				Capt. A. W. Robertson-Glasgow.
30	I I 4	16		?			Hon. Walter Rothschild.
30	10	10	Ladak .				Lady Jenkins.
29 <u>\$</u>	103			?			H. C. V. Hunter.
291	10.	9		?			Col. C. B. Wood.
291	105	13	Ladak .				J. V. Phelps.
			OWNER	r's M	IEAS	SURI	EMENTS.
364	11::		Near Leh				LieutCol. A. E. Ward.
36	10	13	Gilgit .				F. M. Hodgkins.
$33\frac{1}{8}$	II_2^1	105	Ladak .				Sir Edmund G. Loder, Bart.
31	117	9	Chilas .				R.E. Mess, Roorkee.

URIAL 409



Urial Skull and Horns in the Mess of the S.W. Militia, Wana.

B.—AFGHAN URIAL (O. vignei cycloceros).1

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.	Owner.
41½	I 2	$15\frac{1}{2}$?	The late Major G. Dodd.
$39\frac{1}{2}$	103	184	Waziristan	Major F. H. Taylor.
384	$9\frac{3}{4}$	$9\frac{1}{2}$	Chita Oapar Range,	Royal Artillery Mess, Woolwich (LieutCol. C. F. Massey).
372	10‡	11		British Museum (Hume Collection).
363	9	9		Mess of the 60th Rifles (Lord Walter Fitzgerald).
35½	102	16		British Museum (Dr. J. Aitchison).
$35\frac{1}{4}$	$10\frac{1}{2}$	12	S. Waziristan	Capt. A. G. Shea.
351	IO_2^1	$9\frac{1}{2}$	Waziristan	Major F. H. Taylor.
342	$10\frac{1}{2}$	ΙΙ	Do	Sir Edmund G. Loder, Bart.
$34\frac{1}{2}$	84	16	Sind	L. Napier.
$33\frac{1}{2}$	9 ⁵ 8	S_{4}^{3}	5	Major R. L. Tottenham.
33½	$9\frac{3}{4}$	153	Waziristan	Capt. J. F. Turner.
$32\frac{1}{2}$	$9^{\frac{1}{2}}$	ΙΙ	?	Capt. E. A. Fielden.

C.—SALT RANGE URIAL (O. vignei punjabiensis).

Length on front curve.	Circum- ference.	Tip to Tip.	L	ocality	7•		Owner.
$34\frac{3}{4}$	9 ⁵	71	Kala Chitta	Hills	, Punj	ab	Hon. H. G. O. Bridgeman.
34	$9\frac{3}{4}$	$4\frac{1}{2}$	Salt-Range				Capt. L. Trevor Goff.
$33\frac{1}{2}$	94	$12\frac{1}{2}$	Do.				British Museum (Hume Collection).

¹ Blanford (Fauna Brit. India Mamm.) pointed out that the type of O. cycloceros has heavier horns than the Punjab Urial, but does not seem to have been aware that it came from Afghanistan.



Urial. Shot by Col. H. V. Biggs, near Rawal Pindi.

Length on front curve.	Circum- ference.	Tip to Tip.	Loca	ality.		Owner.
33‡	9	142	Salt-Range			Capt. R. Milne.
323	9	$I2\frac{1}{2}$	Near Rawal	Pindi		Major E. G. de Labillière.
323	73	12	Punjab .			G. Blois Johnson.
324	10	II $\frac{1}{2}$?		British Museum (Hume Collection).
31½	$9\frac{1}{2}$	163	Salt-Range			LieutCol. H. W. Codrington.
312	12	10‡		?		LieutCol. J. Manners Smith.
31	9	171	Jhelam			Capt. W. F. Brayne.
31	9 ³ / ₈	$14\frac{1}{2}$	Do			LieutCol. R. H. Rattray.

D.-KOPET DAGH URIAL (O. vignei arkal).

Length on front curve.	Circum- ference.	Tip to Tip	. Locality.	Owner.
451	11	164	N. Persia	Capt. C. T. Daukes.
$39\frac{1}{2}$	12}	141	Russian Turkestan .	Prince E. Demidoff.
381	12	141	N. Persia	Capt. C. T. Daukes.
38	11}	11‡	Persia .	Lord Osborne Beauclerk.
38	102	13	Do	Major P. M. Sykes.
37 🖁	12	17	Elburz Mountains, Persia (north side)	LieutCol. R. L. Kennion.
37	II	101/2	North Persia	A. Bayley-Worthington.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.		Owner.	
363	10	$17\frac{1}{2}$	Persia		Major J. W. Watson.	
36	$10\frac{1}{4}$	15	Do		Hon. Walter Rothschild.	
34\frac{1}{2}	ΙΙ	12	Russian Turkestan		St. George Littledale.	
VARIOUS RACES—OWNER'S MEASUREMENTS.						
$39\frac{3}{4}$			5		Mess of the 27th Punjabis (the late Major G. Dodd).	
$39\frac{1}{2}$	10	9	Seistan, Persia .		Bombay Natural History Society.	
38	103	9	Waziristan		late Capt. G. B. Brown. (See	
$37\frac{1}{2}$	83	9	Do		illustration, page 409.) R.E. Mess, Roorkee.	
$37\frac{1}{4}$	93		Near Rawal Pindi .		Col. H. V. Biggs. (See illustration,	
3634	$9\frac{7}{8}$	5§	?		page 410.) Dr. Albert von Stephani.	
36‡	$9\frac{1}{2}$	14	Near Quetta .		F. Beaty.	
$35\frac{1}{2}$	101	2 0 $\frac{3}{4}$?		Mess of the 21st Punjab Infantry.	
$34\frac{1}{2}$	II_{4}^{1}	21	Gilgit		J. West.	

The RED or GMELIN'S SHEEP (Ovis orientalis).

Apparently differs from all the preceding species by the absence of horns in the females; the horns of the males being not unlike those of the urial, but usually curving backwards, so that their points are situated behind the neck instead of beneath the eyes. General colour of upper parts some shade of yellow or foxy red in summer; in winter, brownish with a whitish saddle-patch; the under parts and lower portions of the legs, as well as muzzle, white. A smaller throatfringe than in the urial, which is always black. Height at shoulder, typically about 2 feet 9 inches.

Distribution.—Cyprus, Persia, Asia Minor, and Transcaucasia.

A.—CYPRIAN RACE (O. orientalis typica).

The typical race, distinguished by its small size, coloration, and the complete rounding-off of the front outer angle of the horns of the rams. This is the smallest of the wild sheep, standing only about 28 inches at the shoulder. Weight, about 70 lbs.

Distribution.—Troödos Mountains of Cyprus.



Cyprian Mouflon.

Length on front curve.	Circum- ference.	Tip to Tip.	Owner.
27	$7\frac{1}{2}$	82	Hon. Walter Rothschild.
255	7 5	7 ½	J. A. Bucknill.
25	8	15월	H. Williamson.
23½	$8\frac{1}{8}$	I 2 1	Col. J. Biddulph.
$23\frac{1}{2}$	85	9½	Sir Edmund G. Loder, Bart.
23	7	54	British Museum.
225	$7\frac{1}{4}$	6	British Museum (Gen. Sir R. Biddulph).
22]	8	123	Sir Victor Brooke's Collection.
201	77	93	Sir H. J. Goold Adams.
175	8	I 1 2	Dublin Museum.
16	74	165	Cambridge Museum.

⁻ Owner's measurements.

B.—ARMENIAN RACE (O. orientalis gmelini).

Distribution.—The mountains of Armenia and other parts of Asia Minor, and Transcaucasia. Heads from the Cilician Taurus approach the Cyprian type and may indicate a distinct race.

Leagth on outside curve.	Circam- ference.	Tip to Tip.	Locality.	Owner.
40}	10%	5½	?	British Museum (W. Burchart Barker).
361	100	5;	:	British Museum.



Armenian Mouflon. Shot by Mr. P. H. Thomas.

Length on outside curve.	Circum- ference.	Tip to Tip.	Locality.			Owner.
313	9	165	Near Daghestan			R. Graham.
301/2	9	$17\frac{1}{2}$	Cilician Taurus	-	. `	P. H. Thomas. (See illustration.)
$-29\frac{3}{4}$	9#	9월	Axylon .			E. N. Buxton.
$28\frac{1}{2}$	IO	141	Asia Minor			R. P. Page.
271	$9\frac{1}{2}$	21	W. Asia Minor			T. Bowen Rees.
$26\frac{1}{2}$	9‡	14	Asia Minor			Col. C. M. Dobell.
26‡	9 7	123	Do.			Capt. F. Blacker.
2610	$8\frac{1}{2}$	I 2 ½	Cilician Taurus			C. G. Danford.
24 3	$9\frac{3}{4}$	16	Asia Minor			H. O. Whittall.
$24\frac{1}{2}$	$9\frac{1}{4}$	I I ½	Persian Frontier			Prince E. Demidoff.
$24\frac{1}{2}$	9	16 3	W. Asia Minor			C. G. R. Lee.
24	9 5	17	Asia Minor			Col. J. Biddulph.
24	$9\frac{1}{2}$	183	Do.			W. N. Williamson.
23	$9\frac{7}{8}$	$14\frac{1}{2}$	Do.			Capt. W. W. Pitt-Taylor.

C.—PERSIAN RACE (O. orientalis erskinei).

In some instances the horns curve forward, when this sheep is practically indistinguishable from an urial. If the two really intergrade, the name *O. orientalis* has priority over *O. cycloceros*.

Distribution.—South flank of the Elburz Mountains of Persia.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.	. Owner.
$27\frac{1}{2}$	10	14	Elburz Range	Hon. W. Erskine.
244	$9\frac{1}{2}$	15‡ (no beard)		Capt. the Hon. G. H. Douglas- Pennant.
24	$9\frac{1}{2}$	17 ¹ / ₄ (beard)	Do.	Do.



Head of Mouflon. Shot by Count Andrassy.

The MOUFLON (Ovis musimon).

The large light-coloured saddle on the otherwise dark winter-coat of the rams and the form of the horns are so distinctive of the species that nothing in the way of description need be attempted in this place. The horns of rams normally curve forwards so as to have their tips near the eyes, and are comparatively massive, with the wrinkles of a type somewhat different from that obtaining in the red sheep. Two races appear recognisable, in one of which the ewes are hornless, while in the other they have short horns. Height at shoulder, about 27 inches.

Distribution.—At the present day the islands of Sardinia and Corsica. Probably the race with hornless ewes is restricted to one of these islands.

Length on front curve.	Circum- ference.	Tip to Tip.	Locality.			Owner.		
381	8	$\operatorname{II}\tfrac{1}{2}$	Sardinia			Duke of Bedford.		
34½	83	163	Do.			W. Moncreiffe.		
33½	9	9	Do.			Hon. M. Egerton.		
321	9	9	Do.			C. Sloane-Stanley.		
32	83	142	Do.			American National Collection.		
31	84	10	Do.			C. G. R. Lee.		

Length on front curve.	Circum- ference.	Tip to Tip.		Localit	ty.		Owner.
304	85	14	Sardinia				Rhys Williams.
30‡	81	10	Do.				Major B. H. Piercey.
$29\frac{3}{4}$	8	$12\frac{1}{2}$	Do.				C. Sloane-Stanley.
$29\frac{3}{4}$	8		Do.				J. D. Cobbold.
29 5	83	11	Do.				Hon. R. A. Ward.
$28\frac{7}{8}$	$8\frac{1}{8}$	21	Do.				E. N. Buxton.
$28\frac{3}{4}$	9	10	Do.				F. G. Barclay.
$28\frac{1}{2}$	$8\frac{5}{9}$	$9\frac{1}{2}$	Do.				Sir Edmund G. Loder, Bart.
$28\frac{1}{2}$	83	7 .	Bohemia	(intro	duce	d)	J. Hamilton Leigh.
281	$9\frac{5}{8}$	98	Sardinia				Edinburgh Museum.
$27\frac{7}{8}$	$8\frac{3}{4}$	54	Do.				W. E. Pease.
27 5	$8\frac{3}{4}$	9	Do.		:	• 4	Prince E. Demidoff.
$27\frac{1}{2}$	$8\frac{3}{4}$	$6\frac{1}{4}$	Do.				Commander J. E. Cameron, R.N.
27 3 8	814	61	Do.				Lieut. E. S. Fleetwood Nash, R.N.
27	$8\frac{1}{2}$	10	Do.			٠	British Museum.

OWNER'S MEASUREMENTS.

341	$9\frac{1}{2}$	183?	Hungary (i	ntroduced)	Count M. Andrassy.
324	9 ¹ / ₈		Austria	do.	Count G. Andrassy.
311	81/2	11½	Bohemia	do.	W. Winans.
29 3	83	102	Do.	do.	Count Erdödy.
29‡	916	134?	Do.	do.	W. Winans.
$27\frac{1}{2}$	104	181?	Do.	do.	J. H. Thomas.
27	81	19?	Do.	do.	W. Winans.
26	$10\frac{3}{8}$.101?	Corsica		Col. J. Marriott.

431

42!

37

81,

14%

15

1.1

Scotland .

Scotland .

DOMESTICATED SHEEP (Ovis aries).

The history and ancestry of the various breeds of domesticated sheep are lost in the mists of antiquity, and naturalists are unable to point with certainty to the wild stock from which any or all of them are derived. This is the more to be regretted, seeing that the Swedish breed is the type of the genus Ovis. Most domesticated breeds differ from wild sheep by the woolly nature of their coat; but since hairy tame sheep are met with in Africa and elsewhere, this point of difference is of comparatively little importance. More weight has been attached to the length of the tail, which may be longer than in the arui; but in some breeds like that of Soa, and also in the Himalayan Barwal and Hunia sheep, this appendage is comparatively short, and its length in other breeds is probably due to a kind of degeneration. The ancestry of domesticated breeds may therefore be looked for among the mouflons or urial or some allied extinct form, since the horns of most breeds approximate to the mouflon-type. In many breeds—Dorsetshire, for example—the females are horned; and four, or even five, horns occur in the males of certain breeds. Some eastern sheep, like the Wallachian, have departed from the mouflon-type by the development of upright corkscrew-horns comparable in form with those of the markhor, but with the twist of the spiral in the opposite direction.

	,					-	A 2	
Length on outside curve.		Tip to Tip.	Lo	cality			Owner.	
45½	9	15	Scotland				J. A. H. Drought.	
4 I	10	2 I	Do.				J. C. Lyell.	
39½	834	21		?			H. E. Surtees.	
37	8‡	20	Loch Awe	, N.1	В.		H. Murray.	
$35\frac{1}{2}$	8	16 ₈		?			Sir Victor Brooke's Collection.	
352	81	24	Dorset				Hon. Walter Rothschild.	
33	11	$22\frac{1}{4}$	Yarkand				British Museum (Hume Collection).	:-
23}	$7\frac{1}{2}$	32 1	W. Kan-sı	1			H. F. Wallace.	
		OW	NER'S MI	EAS	URE	ME	ENTS.	

. R. Shoolbred.

J. C. Phillips.

Sir Edmund G. Loder, Bart.

Many-horned Breeds.

Length on outside curves.	Circum- ference.	Tip to Tip.	Number of Horns.	Owner.
$23 \dots 20^{\frac{1}{2}}$	$6\tfrac{1}{2}4\tfrac{1}{4}$	29	Six	J. G. Millais.
$21\tfrac{1}{4}17\tfrac{1}{2}$	$7\frac{1}{2}\cdots 5$	35	Four	Capt. H. H. Banner.
2120	$6\frac{3}{4}4\frac{1}{4}$	$25\frac{1}{4}$	Do.	D. McDouall.
20116	$64\frac{3}{4}$	I 5 ½	Do.	The late Sir H. B. Meux, Bart.
19\\\\314	$6\tfrac{1}{2}4\tfrac{1}{2}$	2116	Do.	P. C. Millbank.
$19_2^1 \dots 14_4^4$	854	$279\frac{1}{4}$	Do.	British Museum.
$19\frac{1}{2}19$	$7\cdots 4\frac{3}{4}$	$9\frac{3}{4}22$,	R. J. Cuninghame.
$19 \dots 18\frac{1}{2}$	96	$31\frac{1}{2}5\frac{3}{4}$	Four	Sir Basil S. Brooke, Bart.

The following belong to the Wallachian breed:—

Length on the curve.	Length in a straight line.	Girth.	Tip to Tip.	Owner.
$34\frac{3}{4}$	$24\frac{3}{4}$	8	40½	British Museum.
33	17½	$7\frac{1}{2}$	19½	H.R.H. the Duc d'Orléans.
32	24	71	38	Do.
28	194	7½	383	Hon. Walter Rothschild.
$23\frac{1}{2}$	21	8‡	33½	Sir Edmund G. Loder, Bart.
♀ 12 §	10½	$4\frac{1}{4}$	17½	British Museum.

Unicorn Sheep. — An artificial product from the Himalayan Barwal breed :—

Length on curve.	Girth.	Locality.	Owner.
193	14	Nepal	Duke of Bedford.



Horns of Limpopo Buffalo from the Sabi Valley. (In American National Collection; shot by Mr. F. H. Barber.)

The AFRICAN BUFFALO (Bos [Bubalus] caffer).

Gamus, Sudani.

Gădărs, Galla.

Inyati, Swazi and Zulu.

Mboa and Nyati, Chilala and Chibisa.

Mbogo and Nyati, Swahili. Nadi, in Barotsi and Ngami. Nari, Basuto. Beva, Hausa.

All African buffaloes may be regarded as referable to a single species, of which the extreme forms are represented by the great black Cape buffalo and the small red buffalo of the Congo; *B. c. cottoni* of the Semliki Forest, in which only adult bulls are black, being one of the intermediate types. The number of races that have been named is so large that they cannot be quoted here.

A.—SOUTHERN RACES (B. caffer typicus, etc.).

Among the distinctive features of the typical race may be noted the enormous helmet-like mass formed by the closely approximated bases of the horns in old bulls, the backward inclination and comparatively slight angulation of the horns themselves, the shortness of the face, and the great width and size of the heavily fringed and flapping ears. In colour, both the skin and the sparse hairs with which it is clothed are for the most part jetty black; the hairs themselves being directed uniformly backwards from the nape to the rump. Height at shoulder, about 5 feet.

Distribution.—Southern and Eastern Africa. Except on the Zambesi, Chobi, and some neighbouring rivers, buffaloes have now become very scarce in South Africa; but between Umtali and the east coast at Beira, and also from the latter station to the mouth of

the Zambesi, they are to be met with in vast herds, and a few years ago existed in countless numbers. Here they are much protected by the unhealthy nature of the country, which is deadly to Europeans, except between the end of May and November. Except a few protected herds in the Addo bush, the Knysna and Zitzikamma forests, and thickets of the Fish and Sunday rivers, the species has long since been exterminated in the Cape. The Ankoli buffalo has been described as *B. c. radcliffei*, and is characterised by the flattened and less rugged horns; while the name *B. c. neumanni* has been given to the buffalo of northern Uganda, and *B. c. athiensis* to the B.E. African race. The Kivu *B. c. mathewsi* of the Albert Edward Nyanza district is a smaller horned animal, with a white tail-tip, related to the Sudani race.



Ankoli Buffalo. Shot by F. A. Knowles in Uganda.

Greatest Outside.	width. Inside.	Length on front curve.	Tip to Tip.	Width of palm measured on face of horn.	Locality.	Owner.
52½	483		47	II.	Uganda	Her Majesty Queen Alexandra. (Shot by F. A. Knowles,)
51 1	47		$39\frac{1}{4}$	11	East Africa .	S. J. Pearson.
50 3	461		43‡	10	Do	G. N. Crisford.
50	$45\frac{1}{2}$		37	II 1 2	Do	Col. Max. C. Fleischmann.
50	$45\frac{1}{2}$		404	ΙI	Bechuanaland	Sir Edmund G. Loder, Bart.
$49^{\frac{3}{4}}$	47		451	11	East Africa .	II. A. Penton.
493	$44\frac{1}{2}$		$32\frac{1}{2}$	103	Do	Major H. W. Stevens.
49월	$45\frac{1}{4}$		$40\frac{1}{2}$	93	Do	Maharaja of Datia.
498	$47\frac{1}{2}$		$48\frac{1}{2}$	101	Do	R. Holmes.
49‡	$44\frac{3}{4}$		35≩	113	N.W. Rhodesia	Major P. J. Bailey.

Greatest	width.	Length on front	Tip to	Width of palm	Locality.		Owner.
Outside.	Inside.	curve.	Tip.	measured on face of horn.	Documey.		G where
49	454		461	94	East Africa		R. G. C. Napier.
49	461		47	104	Lomagundi's		E. T. Palmer.
40	441		401	rr1	Country. Limpopo		Sir Richard Glyn, Bart.
49 48≩	$44\frac{1}{2}$	 4.T	405	II.‡ IO½	East Africa		E. C. Gepp.
48§	43 44	41	$\frac{32}{35\frac{1}{2}}$	9 ²	Chiromo, B.C.		Hon. Walter Rothschild.
48 48	43		352 36	12	East Africa		E. B. Horne.
48	44 ² / ₄		39	9	Rhodesia		C. Grey.
47 ³ / ₄	$42\frac{1}{2}$		311	112	East Africa		S. S. Bagge.
473	43 ³		42	$9\frac{1}{2}$	Do.		F. Santos Saurez.
47 ³ / ₄	444		401	103	Do.		Sir J. Hume Campbell, Bart.
$47\frac{1}{2}$	431/2	$34\frac{1}{4}$	39½	10	Do.		H.R.H. Prince William of
		0.1		,	37 11 1		Sweden.
47½	42		37‡	I I ½	Ngamiland		Mervyn G. Williams.
47호	42‡		$36\frac{1}{2}$	121	Natal .	٠	Capt. J. C. Phillips.
47‡	42\frac{3}{4}		42	10	East Africa		Capt. H. A. Case.
47	408	***	1	121	Do.	٠	Sir F. J. Jackson.
47	421	***	35½	11½	Do.		H. G. Barclay.
47	42 1		38	104	Do. Do.	٠	Duke of Alba.
46 <u>3</u>	$42\frac{1}{2}$		31# 261	94	Do.		Capt. W. H. Wilkin. Duchess d'Aosta.
46≩ 463	414	***	36½	1 I	Do.		Col. G. Gimlette.
46 3	$4I\frac{1}{2}$		$\frac{35}{38\frac{1}{2}}$	$7\frac{1}{2}$	Do.		A. F. C. Hartley.
46½ 46½	$42\frac{1}{2}$	***		9 4 10½	Do.	٠	Marquis de la Scala.
46½	$42\frac{1}{2}$ $41\frac{1}{2}$		31½ 33‡	81	Do.		Hon. Mrs. Blyth.
46½	412 42 ² / ₄		334 411	10	Do.		I. N. Dracopoli.
46 1	43		$42\frac{1}{2}$	101	Do.		Baron M. de Rothschild.
461	$42\frac{1}{2}$		39 ¹ / ₄	101	Do.		S. E. Milsom.
46	40½		36	10	Do.	,	Lord Hindlip.
453	41		27 ³	8	Pungwe .		Sir Abe Bailey.
453	411	* * *	37 s		South Africa		British Museum.
45 ² / ₄	42½		$44\frac{1}{4}$	93	East Africa		F. C. Stern.
454	401		314	II	Do.		Capt. F. W. Barrett.
45½	$4I_{\frac{1}{2}}^{\frac{1}{2}}$		321	103	Do.		H. S. L. Scott.
$45\frac{1}{2}$	40		$27\frac{3}{4}$	ΙΙ	Do.		Capt. D. H. Macdonell.
$45\frac{1}{2}$	41		$34\frac{1}{4}$	10	Nyasaland		Capt. R. Meinertzhagen.
$45\frac{1}{2}$	401		314	II	N.W. Rhodes	ia	Hon. Guy Wilson.
$45\frac{1}{2}$	40		$29\frac{1}{2}$	9	East Africa		Capt. T. H. Rivers Bulkeley.
$45\frac{1}{2}$	423		433	$9\frac{1}{4}$	Do.		H. Sampson.
454	41 1/2		$37\frac{1}{4}$	10	Do.		Major S. Belfield.
454	41		304	$9\frac{3}{4}$	Do.		M. Seth-Smith.
454	403		324	9	Tana Valley		Major H. De Prée.
45‡	414		37 ¹ 8				British Museum.
45	395		33	IO	East Africa		Capt. G. Wynne Finch.
45			44	10	Do.		H. S. Keating.
45	411		343	10}	?		H. de la Pasture.
45			44	101	East Africa		H. H. Williams.
45	41		32	- 4	N.W. Rhodesi		LieutCol. Frank Lee.
45	39½		29	~	East Africa Do.	٠	Capt. R. Clemm. L. L. Biddle.
45	39½		26 21!	10	Do.		P. F. Hadow.
45	404		315	10	10.		I. I. Hadow.

Greatest Outside.	width. Inside.	Length on front curve.	Tip to Tip.	Width of palm measured on face of horn.	Locality.	Owner.
44 ³	40±		363	9	East Africa .	Capt. P. Chapman.
443	393		$27\frac{1}{2}$	83	Uganda	G. Blaine.
443	395		27 1	111	East Africa .	Sir Robert Harvey, Bart.
44 ³ / ₄	411		391	$II\frac{1}{2}$	N.W. Rhodesia	G. de P. Colvile.
44 ³ / ₄	39 ⁸ 4		241	$9\frac{3}{4}$	Do.	O. C. Bevan.
443	$40\frac{1}{4}$		$36\frac{1}{2}$	$11\frac{1}{2}$	Ngamiland .	F. T. Garbutt.
$44\frac{1}{2}$	$39\frac{1}{4}$		29	12	Pungwe	F. S. Staples.
$44\frac{1}{2}$	383		29	91	East Africa	H.R.H. the Duke of Con-
,					Ch -1: 37-11	naught. F. C. Selous.
44½	391		29	15	Chobi Valley . East Africa .	D. Davies.
441/2	40		38	101	N.W. Rhodesia	J. H. Leche.
441/2	$39\frac{1}{4}$		333	$10\frac{1}{2}$	East Africa .	F. Charrington.
441/2		* *	$37\frac{1}{2}$	12	Do	Dr. A. E. Herz.
$44\frac{1}{2}$	40		394	11	N.W. Rhodesia	R. Beaumont.
$44\frac{1}{2}$	41		$38\frac{1}{2}$	10	Do.	Capt. H. E. Hambro.
44	39		27 ³ / ₄	11	N.E. Rhodesia	W. A. Conduitt.
44	$39\frac{1}{2}$		36	$9\frac{1}{2}$	~ ~	Dr. J. O. Shircore.
44	41		$39\frac{1}{2}$	10½	B.C. Africa . East Africa .	N. C. Cockburn.
♀ 43½	$40\frac{1}{2}$		29	6‡		
♀ 42½	384		32	5	N.E. Rhodesia	J. Turner.
			OWI	NER'S ME	ASUREMENTS.	
54 ³ 8				$16\frac{1}{2}$	German E. Africa	E. von Sick.
51	47		40	ΙΙ	Uganda	Major H. W. A. Christie.
51	47		39	141	East Africa .	H. B. Kittermaster.
485	• • •		358		UpperZambesi	F. W. Walker.
484	43		$30\frac{1}{2}$	I I 🛓	Sabi Valley .	American National Collection.
48			$44\frac{1}{2}$	I I 1/2	East Africa .	(See illustration, p. 418.) R. O. Roberts.
47			31	12	Zitzi Forest, S.	Capt. E. H. Studdy.
			9		Africa.	
$46\frac{1}{4}$	$40\frac{1}{2}$		39	12	N.E. Rhodesia	O. Letcher.
46			35		N.W. Rhodesia	C. S. Mann.

As will be seen from the illustrations, the greatest width scarcely conveys a correct idea of all specimens.



Horns of Bechuana Buffalo. Sir Edmund G. Loder's Specimen.



Skull and Horns of Sudani Buffalo.

B.—NORTHERN RACES (B. caffer æquinoctialis, etc.).

The Sudani race is a smaller animal than the Cape buffalo (height at shoulder, about 4 feet), with the general colour blackish or tawny brown, tinged locally with rufous, and tending to greyish on the legs. Horns smaller, much more flattened at the bases, where they are more widely separated, and in some, although not all, cases retreating less markedly behind the plane of the eyes. The Sudani race was originally described on the evidence of a skull from East Central Africa, but also occurs on the White Nile. The name *B. c. asracensis* has been applied to the buffalo of the Bahr-el-Azrek, a tributary of the Blue Nile, on the southern frontier of Abyssinia. Its horns are described as being more like those of the Cape race.

Greatest Outside.	width. Inside.	Tip to Tip.	Width of palm.	Locality	y	Owner.
44	$42\frac{1}{2}$	43	85	White Nile		P. Niedieck.
41.	371	34₹	81	Mongala		E. M. Sinauer.
40	39	39	10	White Nile		LieutCol. J. W. Yardley.
40	37 ½	384	8‡	Kordofan		Capt. C. C. Maud.
40	37	32	117	Abyssinia		E. Lort-Phillips.
39#	35½	27 ½	9	Sudan .		Capt. F. L. Livingstone-Learmonth.
39½	351	34	85	White Nile		Capt. A. H. Vivian.

Greatest Outside.	width. Inside.	Tip to Tip.	Width of palm.	Locality.			Owner.
39	36	334	10	White Nile .			W. F. Wailes-Fairbairn.
383	33	25‡	12	Do.			Douglas McDouall.
381	351	301	81	Do.			H.R.H. the Duke of Connaught.
$38\frac{1}{2}$	$34\frac{1}{2}$	324	7	Do.			Major P. M. Dove.
381	34 \frac{7}{8}	32 1	83	Do.			R. McD. Hawker.
38 1	34	231	10	Do.			Capt. R. F. Balfour.
38	34	33		Do.			F. W. Greswolde-Williams.
38	$34\frac{1}{2}$	28%	7∄	Do.			G. H. Cheetham.
38	34	29	8	Do.			Major H. D. Pearson.
37≟	$33\frac{1}{2}$	$26\frac{1}{4}$	10	Do.			Capt. C. E. Hills.
374	$34\frac{1}{8}$	334	S§	Lado .			Major P. H. G. Powell-Cotton.
371	34	33‡	91/2	White Nile			P. Santos Saurez.
$37\frac{1}{4}$	33	284	9	Do.			Capt. W. E. Reymes-Cole.
37	$34\frac{1}{2}$	35‡	$10\frac{1}{2}$	Bahr-el-Ghazal			G. Blaine.
37	$32\frac{1}{4}$	234	91	White Nile			Lord Desborough.
36 §	$32\frac{1}{2}$	26	81	Sudan .			Capt. A. Craufurd.
$36\frac{1}{2}$	$32\frac{1}{4}$	261	8	Do			P. M. Tottenham.
$36\frac{1}{2}$	33	$30\frac{1}{2}$	$9\frac{1}{2}$	Do			Col. A. Colville.
$36\frac{1}{2}$	313	29	9	Do			Capt. the Hon. M. P. Macnaghten.
364	323	325	$7\frac{1}{2}$	Do			Countess of Sefton.
361	3.2	291	9	Do			C. C. Tower.
36‡	32	22§	$S_{\frac{1}{2}}$	White Nile	,		H. E. Allen.
36	$32\frac{1}{2}$	29	$9\frac{1}{2}$	Do.			J. V. Colby.
36	$33\frac{1}{2}$	32	$9\frac{1}{2}$?			British Museum.
35 ³ / ₄	32	301/2	9	Sudan .			R. A. Colvin.
35₹	$33\frac{1}{2}$	35	$7\frac{1}{2}$	Do			G. C. Whitaker.
$35\frac{1}{2}$	$31\frac{3}{4}$	281	81	White Nile			E. N. Buxton.
$35\frac{1}{2}$	32	284	8	Lado .			Major P. H. G. Powell-Cotton.
$35\frac{1}{2}$	$32\frac{1}{2}$	314	$7\frac{3}{4}$	White Nile			S. H. Whitbread.
♀ 35½	32	251	5	Dinder Valley			C. D. Eyre.
35‡	31 3	$29\frac{3}{4}$	8.1	Blue Nile			Capt. N. A. Orr-Ewing.
$35\frac{1}{4}$	305	21 ³ / ₄	93	Do.			Capt. H. R. Headlam.
$35\frac{1}{4}$	30	181	$8\frac{1}{2}$	Do.			LieutCol. J. Ponsonby.
35	32	$31\frac{1}{2}$	83	Do.			Norman B. Smith.
			OWNE	R'S MEASUR	EM.	EN	TS.
433	37½	28:1	ΙI	Nimuli .			F. A. Knowles.
39 ⁸	$34\frac{1}{2}$	301	83	Sobat .			E. M. Tabor.
354	J*f2	502	·.I	NOTICE .			(31 337 (3 41)

94 White Nile . . Sir W. Garstin.

 38^{3}_{\pm}

 $35\frac{1}{2}$

35 s



Skull and Horns of Congo (?) Dwarf Buffalo.

C.—SHORT-HORNED RACES (B. caffer brachyceros, B. c. planiceros, B. c. nanus, etc.).

Bona, Hausa.

Despite the differences in size, colour, and the form of the horns between the dwarf red buffalo of the Congo (B. c. nanus) and its gigantic black cousin of the Cape, such a gradual transition can be traced from the one type to the other, that both are evidently nothing more than local modifications of one variable species. In the dwarf buffalo of the Congo the colour of the hair is red or yellow, the ears are fringed with very long hair, and the horns are much flattened at the base, with long smooth tips directed upwards. This type may be traced, with some modifications, to the Gabun. In Ashanti it is replaced by the red B. c. beddingtoni. In Gambia and Senegambia there is a larger brownish buffalo, with more laterally expanded and recurved horns known as B. c. planiceros. In the south Nigerian B. c. hunti cows and young bulls are dun. In the Kwilu district of the Congo occurs a dark-coloured race (B. c. simpsoni,) typified by a female head in the British Museum. Another type is the Lake Chad buffalo (B. c. brachyceros), first discovered by the early explorers Denham and Clapperton. In height the Congo dwarf buffalo only reaches some 42 inches at the shoulder. Weight, 579 lbs. clean.

Length on outside curve.	Circum- ference.	Tip to Tip	o. Local	ity.		Owner.
28	20	20	Senegambia			Hon. Walter Rothschild.
27½	$20\frac{1}{2}$	$12\frac{3}{4}$	Gold Coast			Capt. C. H. Armitage.
$26\frac{1}{2}$	19	18	N. Nigeria			Capt. J. C. Parker.
$26\frac{1}{2}$	194	7	Do.			Capt. H. V. Venables Kyrke.
26	183	$22\frac{3}{4}$	Do.			G. C. W. King.
26	$22\frac{1}{2}$	20	French Congo			C. S. Mann.
253	174	$17\frac{1}{2}$	S. Nigeria			W. D. Downes.
$25\frac{1}{2}$	$18\frac{4}{3}$	15	N. Nigeria			F. Cogan.
$25\frac{1}{2}$	$20\frac{1}{2}$	12	S. Nigeria			Lieut. A. W. Hunt, R.N.
25	$17\frac{1}{2}$		Portuguese Gu	inea		M. V. Hay.
24 ³ / ₄	19	7 ½	Sierra Leone			Capt. W. B. Stanley.
$24\frac{3}{4}$	$23\frac{1}{2}$	141	N. Nigeria			Capt. O. M. Harris.
24 ³ / ₄	$21\frac{3}{4}$	26	Do.			H. de C. Mathews.
$24\frac{1}{2}$	$18\frac{1}{2}$	15	Do.			J. C. Sciortino.
24	$15\frac{1}{2}$	7	Do.			Capt. L. M. Bucknill.
24	191	17	Do.			Capt. G. C. Kelly.
24	183	$13\frac{1}{2}$	Nepoko Valley	, Con	go	R. de la Huerta.
$23\frac{1}{2}$	$23\frac{1}{2}$	12	Do.			Duke of Peneranda.
$23\frac{1}{2}$,15	10	Gold Coast			Major G. S. C. Jenkinson.
$23\frac{1}{2}$	20	164	Do.			Capt. G. W. Dawes.
23	19	$20\frac{1}{2}$	N. Nigeria			R. M. Blackwood.
23	$16\frac{1}{2}$	81	Nigeria			Sir Abe Bailey.
22 3	$16\frac{1}{2}$	12	Ashanti .			C. Beddington.
22 ³ / ₄	$17\frac{3}{4}$	201	N. Nigeria		٠.	H. S. Berkeley.
$22\frac{1}{2}$	17	14	Gold Coast			Capt. T. W. C. Carthew.
$22\frac{1}{2}$	$16\frac{1}{2}$	184	Nigeria .			Major-Gen. P. S. Wilkinson.
$22\frac{1}{4}$	2 I	$12\frac{3}{4}$	N. Nigeria			C. S. Burnett.
22	14	15	Congo .			Capt. H. M. Stephenson.
22	19‡	$9\frac{1}{4}$	Do			J. Seally Bell.
$2I\frac{1}{2}$	$17\frac{1}{2}$	$9\frac{1}{2}$	Near Kumasi			The late Dr. W. H. Langley.
$2I\frac{1}{2}$	15	8	Gold Coast			Capt. G. H. Hastings.
21½	$12\frac{3}{4}$	$2\frac{1}{4}$	West Africa			British Museum.
21	173	144	Portuguese Gu	iinea		C. S. Burnett.
21	15	9^{1}_{4}	Nigeria			A. Ohlsson.
21	$17\frac{1}{2}$	164	Do.			Major J. F. Loder-Symonds.
♀21	11	16	N. Nigeria			G. J. Letham.

Length on outside curve.	Circum- ference.	Tip to Tip	. Locality	Σ.		Owner.
\$ 20½	11	63	Nigeria .			W. D. Barker.
$20\frac{1}{2}$	17	17 4	Senegambia			G. Fenwick-Owen.
201	16½	10	Nigeria .			Major D. F. MacCarthy Morrogh.
♀ 20½	13}	141	Do			R. M. Blackwood.
201	15	II	Benue Valley			Capt. E. J. Wolseley.
$20\frac{1}{2}$	142	6½	N. Nigeria			A. B. Harcourt.
201	20	I I ½	S. Nigeria			C. Bowyer-Smijth.
201	183	I 2	Do.			Capt. R. M. Heron.
20 1	17½	16	Sierra Leone			Capt. J. F. Bill.
20	ıS	$\mathbf{I} 2 \frac{1}{2}$	S. Nigeria			Capt. W. V. Nugent.
193	14	13	Sierra Leone			Capt. E. J. Carter.
19	10		Lake Chad			Hon. Walter Rothschild.
183	I I 🖔	$3\frac{1}{2}$	Nigeria .			W. H. Broun.
īS≅	16	81	?			A. W. Boddy.
187	12	63	Gambia .			H. C. Goddard.
182	17	15	N. Nigeria			Major J. B. Cockburn.
182	17	$S\frac{1}{2}$	Do.			J. F. Pett.
182	\mathbf{II}_{2}^{1}	134	Senegambia			Hon, Walter Rothschild.
9 18₺	$10\frac{1}{2}$	$11\frac{1}{2}$	Do			G. Fenwick-Owen.
181	174	43	Congo .			Col. J. J. Harrison.
\$ 1 8}	103	$5\frac{1}{2}$	Lake Chad D	istric	t.	British Museum (Capt. Denham, R.N., and Col. Clapperton).
		C	OWNER'S ME	ASU	JR:	EMENTS.
264	$2\mathrm{I}_{2}^{1}$	26 ³	N. Nigeria			H. G. Glenay.
22 ² / ₄	17	144	Sierra Leone			Capt. H. A. Carter.

The following specimens from the French Congo may belong to B. caffer brachyceros:—

Shot by the late Prince P. Demidoff.

Length.	Girth.	Tip to Tip.
28	241	131
26	211	182
251	25	212
♀ 22 ½	16	167



Head of Indian Buffalo. Shot by the late Maharaja of Cooch Behar.

The INDIAN BUFFALO or ARNA (Bos [Bubalus] bubalis).

No one is the least likely to confuse this animal with the African species. Both belong, indeed, to the same group of the genus Bos, and have the same rounded upper portion of the head and angulated horns. In the Indian species, however, the head is much longer, the ears are narrower and less heavily haired, and the horns of the male are widely separated on the forehead and totally different in form. Two types of horns may be recognised—one very massive, and curving regularly up from each side of the head in a subcircular manner; the other more slender, directed for the greater part of their length almost straight out from the head, and always with a wider spread. The first is the typical race (B. bubalis typicus), while the second, or Assam, race (probably now extinct) is B. bubalis macroceros. A third race from Assam has been named B. b. fulvus, and is distinguished by the concave profile of the skull and its dun colour. Height at shoulder, about 6 feet 2 inches; girth behind shoulder, 10 feet 8 inches. In a bull shot by the late Maharaja of Cooch Behar the length from the nose to the tip of the tail was 14 feet 2 inches, and to the base of the tail II feet; the maximum girth being 10 feet 8 inches, and the weight of the head, when cut off, 158 lbs.

Distribution.—Typically India, where the range includes the plains of the Bramaputra and Ganges from the eastern end of Assam to Tirhut, and the Terai as far west as Rohilcund, the plains near the coast in Midnapore and Orissa, and also the plains in the Eastern Central Provinces as far south as the Godaveri and Pranhita rivers. Buffaloes also occur in Ceylon, as well as in the Malay and Indo-Chinese countries; but whether any of the latter are truly wild is uncertain. In a domesticated state, South Europe, Egypt, etc. Native name of male, arna; of female, arni.

Length on outside curve.	Circum- ference.	Tip to Tip.	Widest inside.	Widest outside.	Locality.	Owner.
778	17 ⁷ 8				?	British Museum (Sloane Col-
70	181	60	$67\frac{3}{4}$	72	Near Dubri, Assam	lection). J. H. Whitehouse.
$65\frac{3}{4}$	$20\frac{1}{4}$				Do.	British Museum (Col. J. Mathie).
62	17	101			Do.	Hon. Walter Rothschild.
♀61 3	$15\frac{3}{4}$	$22\frac{1}{5}$	45‡		Cooch Behar	H.H. the Maharaja of Cooch Behar.
♀61½	16	22	48		Assam	Hon. Walter Rothschild.
60	22		64	72	Central Provinces .	Major B. Vincent.
60	20	40	52		?	Sir Edmund G. Loder, Bart.
♀60	$13\frac{1}{2}$	$57\frac{1}{2}$	623	67 5	Assam	Capt. L. P. Haviland.
♀ 59¾	16	48	57	634	Do	J. C. Phillips.
59	23	34	49	56 3	Do	T. H. Monteath.
$57\frac{3}{4}$	$17\frac{1}{2}$	$55\frac{1}{2}$	65	714	Central Provinces .	J. May.
57	$18\frac{1}{2}$	$41\frac{1}{2}$	60		Do	Col. G. D. F. Sulivan.
57	15	49	52		Assam	A. H. Straker.
♀ 57	$14\frac{1}{2}$	53	6 1		3	Sir Edmund G. Loder, Bart.
56‡	$2I\frac{1}{2}$	40	523		Assam	British Museum (Hume Collection).
ç <u>5</u> 6	194	33 ² / ₈	501		Cooch Behar	H.H. the Maharaja of Cooch Behar.
56	$\scriptstyle 17\frac{1}{2}$	62	$61\frac{1}{2}$	$64\frac{1}{2}$	Bengal	G. Monteath.
56	184	108			Assam	H.R.H. the Duc d'Orléans.
55½	181	29	44		?	J. Carr Saunders.
55	22	55½	62	66	Central Provinces .	L. T. Harris.
$54\frac{1}{2}$	18%	384	48%		?	British Museum (Hume Collection).
\$ 54½	123	693	70		Assam	Do.
541	195	241	405	49	?	Stockholm Museum.

Length on outside curve.	Circum- ference.	Tip to	Widest inside.	Widest outside.	Locality.	Owner.
54½	19	50	59	64	5	Viscount Powerscourt.
54	181	34	47 2	54%	Cambodia	H.R.H. the Duc de Mont-
153 ¹ / ₅	23	30	42½		Cooch Behar	pensier. H.H. the Maharaja of Cooch Behar.
53	(6 ft. 2½ in	$36\frac{1}{2}$	483	56	;	Col. H. Lysons.
52	20	211	$41\frac{1}{2}$	491	Central Provinces .	Earl of Sefton.
514	$18\frac{1}{2}$	22	384		Assam	Sir Peter Walker, Bart.
511	18	38	50	56	Central Provinces .	Hon. J. Best.
$51\frac{1}{2}$	19	43	524	60½	Do	Capt. A. McB. Woodside.
51 3	198	45 ³ / ₈	50		Do	Major P. H. G. Powell-
50 ³ / ₄	22	$34\frac{1}{2}$	$44\frac{1}{2}$	50½	Cooch Behar	Cotton. The late Sir Henry D. Tich-
50 ³ / ₄	188	$54\frac{1}{2}$	601	65	Patna	borne, Bart. BrigGen. F. H. Whitby.
50 ⁴ 3	19½	$34\frac{1}{2}$	46 3	54	Central Provinces .	H. Tyler.
$50\frac{1}{2}$	19‡	23 ³ / ₄	$42\frac{1}{2}$	$49\frac{1}{2}$	Do	H. H. Cripps.
50	20	$34\frac{1}{4}$	47	$53\frac{1}{2}$	Cochin China .	D. Dickson.
50	$18\frac{1}{2}$	$48\frac{1}{2}$	60		Central Provinces .	Major C. F. Pinney.
50	131	33	381		Assam	Noel Fenwick.
50	17	313	50		Do	Col. D. M. Lumsden.
50	$19\frac{1}{2}$	$36\frac{1}{2}$	46	$52\frac{1}{2}$	Do	A. Ezra.
49\frac{3}{4}	194	335	48	55‡	Central Provinces .	Countess of Sefton.
			C	WNER'S	S MEASUREMENTS	S.
71	$21\frac{1}{2}$	343	60		Near Dubri, Assam	Measured by the late A. O.
♀70½	18		64	78	Do.	Hume; shot by A. Forbes. The late Sir A. Campbell-Orde.
67½					Do.	Major H. Gidney.
♀ 64½	18	$42\frac{1}{2}$	60	96	Do.	J. Campbell of Kilberry.
59½	$18\frac{1}{2}$		54	61 2	Eastern Bengal .	R.E. Mess, Roorkee.
59½	15		53	59	?	Sir Savile Crossley, Bart.
♀ 57½	15 ³ / ₄	$95\frac{1}{2}$		$96\frac{1}{2}$	Cooch Behar	H.H. the Maharaja of Cooch Behar.
57	18				Central Provinces .	J. D. Inverarity.
56	18	$29\frac{1}{2}$		$57\frac{1}{2}$?	J. Whitaker.

¹ Measured round outside curves across skull, 9 ft. 11% ins. Another pair, 10 ft. 5 ins.; circumference of horn at base, 21 inches.

The following specimens are, with one exception, from Ceylon:—

Length on outside curve.	Circum- ference.	Tip to Tip.	Widest inside.	Widest outside.	Loca	lity.		Owner.
40	I 5½	24	35‡	42	Ceylon			F. T. Wright.
♀ 37⅓	$9\frac{4}{3}$	42}	47	50½	Do.			M. J. Alderson.
35	132	18	30.1	$37\frac{1}{2}$	Do.			Marquis of Stafford.
341	154	25%	35		Do.			Earl Cairns.
\$ 33 ¹ / ₄	9	31½	37		Do.			Do.
331	13	324	38	43	Do.			Major F. H. N. Pym.
314	16	28		38½	Do.	,		Marquis Camden.
312	151	27	34	38	Do.			P. Niedieck.
31½	16		$47\frac{1}{4}$		South A		ia	H. L. Heber Percy.
29	135	28½	$33\frac{1}{4}$	37				K. J. F. Bickersteth.
			OWI	NER'S	MEASUI	REMI	EN'	rs.
35	14_{2}^{1}	391	42	$47\frac{1}{2}$	Ceylon			H.R.H. Prince George of Bayaria.
\$ 2 \$	93	181	26	312	Do.			H. M. von Archer.
ç 271	$9\frac{1}{2}$	15	25	291	Do.			H.R.H. Prince Pedro d'Orléans and Braganza.

ANOA 431



Head of Anoa.

The ANOA (Bos [Bubalus] depressicornis).

The smallest wild member of the ox tribe, characterised by its straight, upright horns, and the frequent presence of white spots on the sides of the head or elsewhere. Although so different in the form of the head and horns from the adult Indian buffalo, the anoa is in these respects much more like the young of the latter; and the two are connected to a considerable extent by the tamarau, or Philippine buffalo (*Bos mindorensis*) of the island of Mindoro. As in all the Oriental buffaloes, the hair of the fore-part of the back is directed forwards in the anoa. Height at shoulder, about 3 feet 3 inches. Two races are recognised.

Distribution.—The island of Celebes.

	Distribution.	- 1 110 1516	ind of Celebes.
Length on front curve.	Circum- ference.	Tip to Tip.	Owner.
128	6	612	British Museum.
121	6	54	G. A. Wright.
$10\frac{1}{2}$	61	7	Carl Hagenbeck.
10	6	5 ½	Sir Edmund G. Loder, Bart.
10	5 7 /8	55	Sir Victor Brooke's Collection.
	OWNER'S	MEASU	REMENTS.
3	≈ 1	n 1	Paris Museum

Paris Museum. 158 7 % 75 Jesuit College, Manila. 1 132 94 5 71 Dr. Albert von Stephani. 93 58 $9\frac{1}{2}$ 81 81 Dublin Museum.

¹ Measured by the late Rear-Admiral R. A. J. Montgomerie.



Head of European Bison. Shot by H.H. the Prince of Monaco.

The BISON (Bos [Bison] bonasus).

The great elevation of the fore-quarters, the mass of long hair clothing the head, shoulders, and fore part of the body, together with the peculiar form of the head and horns, the latter of which are cylindrical, serve at once to distinguish bison from the other members of the ox tribe. There is also a difference in the number of ribs between the bison and the more typical oxen, the number in the former being 14 pairs, against 13 in the latter. In the European species the mass of hair on the fore-quarters is not so long as in its American cousin, the form of the skull is different, and the hind-quarters do not fall away nearly to the same extent. Some differences may be noted between Caucasian and Lithuanian specimens, which are now referred to separate races. Height at shoulder, 6 feet 1 or 2 inches. In a Caucasian bull killed by Mr. Littledale, the length from the nose to the root of the tail measured 10 feet 1 inch, the height at the shoulder, 5 feet 11 inches, and the approximate girth of the body, 8 feet 4 inches. Weight (Mr. W. Winans), 2001 lbs.

Distribution.—At the present day restricted to the Caucasus and the forest of Bielowitzka in Lithuania; the herds in the latter district existing in a protected state. The name aurochs, commonly misapplied to the bison, belongs to the extinct wild ox of Europe. The Caucasian race is named B. b. caucasius.

Length on outside curve.	Circum- ference.	Tip to Tip.	Widest inside.	Locality.	Owner.
20	12	20		Pilawin Game Park	W. Winans.
184	$12\frac{1}{8}$	134	191	Lithuania	British Museum (H.I.M. the
18	12½	16	20	Caucasus	Tzar Alexander). St. George Littledale.
$17\frac{1}{2}$	10	$18\frac{1}{2}$		Lithuania	Major Algernon Heber-Percy.
174	$13\frac{1}{2}$	17	•••	Do	Prince of Monaco.
$16\frac{3}{4}$	$I2\frac{1}{4}$	21 ⁷ / ₈	$24\frac{1}{4}$?	Sir Edmund G. Loder, Bart.
$16\frac{3}{4}$	$II\frac{1}{4}$	183	$21\frac{1}{2}$	Woburn	G. L. Harrison.
\$ 16	84	12	•••	Do	Royal Scottish Museum.
♀ 154	8	6	•••	Lithuania	Major Algernon Heber-Percy.
14	14	26‡		Woburn	Royal Scottish Museum.
♀13	84	$9\frac{3}{4}$	14	Caucasus	St. George Littledale.
			OWNER'S	MEASUREMEN	rs.
$18\frac{1}{6}$	$10\frac{4}{5}$	$17\frac{1}{2}$	207	Lithuania	The late Prince Henry of
172	$13\frac{3}{10}$	13 ² 5	20 ₁₀	Do	Liechtenstein. Do.
15₹	I 2 5/8	$2I\frac{1}{4}$	***	Do	Imperial Museum, Vienna.



Skull and Horns of Record American Bison. Shot by Lord Rendlesham.

The AMERICAN BISON (Bos [Bison] bison).

Some of the points distinguishing this species from the European bison have been mentioned under the head of the latter, but it may be added that in the typical race of the former the horns are shorter, thicker, blunter, and more sharply curved. In the skull of the American animal the sockets of the eyes have a more tubular form. Height at shoulder, about 5 feet 9 inches; weight, from 15 to 20 cwt.; an adult bull weighed by W. T. Hornaday scaled 2100 lbs.

Distribution.—The greater portion of Western North America, ascending to the Great Slave Lake, and descending to New Mexico and Texas; now nearly exterminated. American writers recognise two races—the prairie-bison (B. bison typicus), and the larger wood-bison (B. bison athabascæ) of the forest highlands of the North-West.

Length on outside curve.	Circum- ference.	Tip to Tip.	Widest inside spread.	Locality.	Owner.
20 ⁷ / ₅	15		$30\frac{1}{2}$	Wyoming	Lord Rendlesham.
174	$12\frac{3}{8}$	15%		?	H.R.H. the Duke of Saxe-Coburg and Gotha.
171	12		25½	Wyoming	H.R.H. the Duc d'Orléans.
172	$13\frac{1}{2}$	21		?	Viscount Powerscourt.
178	11 ⁸	103	17%	?	British Museum.
168	141	24		Bighorn Mts., Wyoming	Earl of Lonsdale.

Length on outside curve.	Circum- ference.	Tip to Tip.	Widest inside spread.	Locality.				Owner.
¹ 16½	${\tt I}2\tfrac{1}{2}$	198		Colorado				Sir Edmund G. Loder, Bart.
164	$13\frac{1}{2}$	144			?			Duke of Portland.
16‡	13	$22\frac{3}{4}$		Wyoming				Prince Nicolas Ghika.
2 16 $^{\frac{1}{8}}$	15 ⁷ / ₈	25 ³ / ₄		Colorado				Sir Edmund G. Loder, Bart.
154	14	$27\frac{3}{4}$		N.W. Terr	ritory			E. G. Jenkins.
15½	$14\frac{3}{8}$		19_{4}^{3}	Wyoming				St. George Littledale.
15g	I05	$15\frac{1}{2}$		Do.				Abel Chapman.
14	13	$2I\frac{1}{2}$		Do.	٠			G. L. Harrison.
			OWNE	R'S MEAS	SURI	ЕМЕ	NT	S.
$20\frac{1}{4}$	16§	$33\frac{1}{2}$	• • •		?			W. H. Root.
19	$12\frac{1}{2}$			W. Monta	na			P. Liebinger.
1 183	15	$27\frac{1}{2}$?			American National Collection.
$18\frac{1}{2}$	15	25		Wyoming				P. N. Graham.
18	14			Montana				F. Sauter.
$17\frac{1}{2}$	${\rm I}2\tfrac{1}{2}$			S.W. Mon	itana			Theodore Roosevelt.
17	14	$17\frac{1}{2}$		Yellowston	ne, Mo	ontan	na	Count E. Hoyos.
16 %	I 2 1/4	2 05/8	•••	Wyoming				Dr. Albert von Stephani.
163	13	19½		Nebraska				Imperial Museum, Vienna.

² Prairie.

1 Wood Bison.



Skull and Horns of Wild Yak. From a specimen in the British Museum, presented by the late Mr. A. O. Hume.

The YAK (Bos [Poëphagus] grunniens).

The plateau of Tibet is remarkable for the number of its peculiar mammals, among which is the yak. Apparently its nearest relatives are the bisons, but the yak has not the great elevation of the withers in comparison with the hind-quarters so distinctive of the latter, and the long hair forms a fringe on each side of the flanks, shoulders, and thighs, as well as a tuft on the chest, while the tail is clothed with a huge mass of similar long hair, forming, when cut off and mounted, the well-known "chowries." Yak-horns are much larger than those of living bison, and have a totally different curvature; while there are also important differences in the skull. Height at shoulder, from about 4 feet 10 inches to at least $5\frac{1}{2}$ feet; girth behind shoulder, 9 feet $1\frac{1}{2}$ inches; length from between horns to base of tail, 8 feet $\frac{1}{2}$ inch;

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tail, 3 feet $2\frac{1}{2}$ inches; from between horns to nose, I foot $3\frac{1}{2}$ inches (Lieut.-Col. H. M. Biddulph). Weight, about I 140 lbs. Wild yak are uniformly blackish brown in colour, any trace of white indicating domestication, and probably cross-breeding.

Distribution:—The plateau of Tibet, part of the Kan-su province of China and North-eastern Ladak, at elevations between about 14,000 and 20,000 feet. The grunting cry from which the animal takes its name is peculiar to the domesticated breeds.

Length on outside curve.	Circum- ference.	Tip to Tip.	Lo	ocality			Owner.
38‡	17	19	Kuenlun I	Mts.			British Museum (Hume Collec-
35½	15	16		?			tion). E. L. Phelps.
35 ¹ / ₄	$14\frac{1}{2}$	17	Tibet.				St. George Littledale.
34	12	$30\frac{1}{2}$	Ladak				Hon, Walter Rothschild.
321	$14\frac{1}{2}$	171	Tibet .				P. F. Hadow.
$32\frac{1}{2}$	16	25	Do.				Sir Edmund G. Loder, Bart.
$32\frac{1}{2}$	14	141	Do.				Capt, R. Longstaff.
32	13 5	15.}	Do.		,		H. C. V. Hunter.
32	$14\frac{1}{2}$	9	Do.				I. Morse.
32	16	17	Do.				P. Church.
32	$15\frac{3}{4}$	$21\frac{3}{4}$	Do.				Capt. D. L. R. Lorimer.
$31\frac{3}{4}$	151	15≟	Do.			·.	G. L. Harrison.
312	${\tt I}{\tt 5}{}^{1\over 2}$	171	Chinese 7	Tibet			Capt. J. A. Stewart Balmain.
314	$15\frac{1}{2}$	13	Do.				LieutCol. H. W. Codrington.
311	$14\frac{1}{2}$	16 <u>3</u>	Do.				Major Sir E. F. Coates.
314	15½	181	Do.				LieutCol. H. M. Biddulph.
31	14	•••	Do.				Col. F. C. Lister-Kay.
31	$13\frac{1}{2}$	14	Ladak				Arnold Pike.
31	16‡	$17\frac{3}{4}$	Kumaon				E. R. Neave.
31	$14\frac{1}{2}$	16‡	Tibet .				Hon. J. D. Boyle.
30 3	15	20	Do.				R. S. H. Walford.
30 3	16	22 ¹ / ₄	Do.				C. F. M. Pike.
303	132	${\tt IO}_2^{\underline{1}}$	Ladak				Sir Robert Harvey, Bart.
♀ 30¾	13	20	Do.				Major L. Oldfield.
♀ 30	I I 🛔	$45\frac{1}{2}$	Tibet .				Duke of Bedford.

RECORDS OF BIG GAME

Length on outside curve.	Circum- ference.	Tip to Tip.	Locality.			Owner.
30	141	194	?			Major Sir W. R. Codrington.
30	$14\frac{3}{4}$	30	?			J. C. Phillips.
		OWN	NER'S MEASUI	REM	ŒN	TTS.
40	18	•••	Kuenlun Mts.			A. D. Carey.
39			?			Lucknow Museum.
384	18½	$26\frac{1}{4}$	Kuenlun Mts.			British Museum. (Hume Collection a short by late A. Deleleich)
33	16	18	N.W. Tibet			tion; shot by late A. Dalgleish.) Capt. S. H. Charrington.
327	$13\frac{1}{2}$	19	Tibet .			Capt. B. H. Shaw-Stewart.
32 3	14	17½	Chang Chenmo			Major P. H. G. Powell-Cotton.

Do.

 $31\frac{7}{8}$ $14\frac{1}{4}$ $18\frac{1}{4}$ Do. . .

GAUR 439



Head of Indian Gaur.

The GAUR or INDIAN BISON (Bos [Bibos] gaurus).

This splendid wild ox, the so-called bison of Anglo-Indian sportsmen, is the typical representative of a group of Oriental species nearly related to the domesticated ox, but presenting certain well-marked points of difference. Among these may be noted the shorter head and tail, the frequently elliptical section of the horns, and, above all, the presence of a more or less distinct ridge running from the withers to the middle of the back, where it terminates in a sudden step. In the gaur this ridge is strongly developed, and in the typical race the summit of the forehead forms a high arch between the horns, which bends forward to form a concave profile. With the exception of the white "stockings" common to all the members of the group, the colour of the gaur is uniform; but the much-flattened horns are of a peculiar yellowish-green tint at the base. The height of adult bulls at the shoulder usually varies from about 6 feet to 6 feet 4 inches, though

specimens of more than 5 feet 5 or 6 inches are not often killed; it is, however, stated that a Nilgiri bull stood 6 feet 10 inches, while Kachar and Burmese bulls have been asserted to reach 7 feet at the withers.

Distribution.—The forest hill-tracts of Peninsular India, Assam, Burma, Siam, and the Malay Peninsula, as well as the forests along the outer Himalaya as far west as Nepal. South of the Ganges, where it has not been exterminated, the gaur inhabits suitable districts in Chutia Nagpur, Orissa, the Northern Circars, Central Provinces, Hyderabad territories, and all the Western Ghats. The Burmese race, or pyun (B. g. readei), is nearly black, with a throat-tuft; and in the Malay race, or saladang (B. g. hubbacki), the arch on the crown of the skull is less developed, and may be absent.

A.—WILD RACES.

Widest outside.	Circum- ference at base.	Tip to Tip.	Widest inside.	Length on outside curve of longer horn.	Locality.	Owner.
441	20	42	4 I ½	$23\frac{1}{2}$	Eastern Bengal	Capt. L. P. Haviland.
444	21	$29\frac{1}{2}$	38‡	$33\frac{1}{2}$	Burma	J. McF. Petters.
43 ⁸	17½	34	39	304	Parambikolam .	G. Elliot Browning.
43	20	31	38	32	Cooch Behar .	H.H. the Maharaja of Cooch Behar.
43	17	$32\frac{1}{2}$		29½	Coimbatore, S.	P. Church.
422	181	25	33‡	$33\frac{1}{2}$	Travancore .	Capt. T. W. Greenfield.
422	$19\frac{1}{2}$	31	35 3	314	Madras	Col. T. J. R. Lucas.
42	18	$34\frac{1}{2}$	$37\frac{3}{4}$	$29\frac{1}{2}$	Central Provinces	Hon. H. G. O. Bridgeman.
$4I\frac{1}{2}$	16	30		29	Assam	A. J. Walter.
4 I ½	194	26½	36	31	Mysore	Capt. C. P. Graham.
414	20	$32\frac{1}{2}$	36 1	30	?	J. F. Bryant.
41	18	24		33 ³ / ₄	Madura District	Bethnal Green Museum (J. D. Goldingham).
41	$17\frac{1}{2}$	281	35	314	Central Provinces	
41	20	$34\frac{1}{2}$	362	27	Siam	J. H. Thurston.
41	193	37	•••	$27\frac{3}{4}$	Kalkerry, S. India	Col. W. E. Fairholme.
$40\frac{1}{2}$	20	25		$34\frac{3}{4}$	Vardi Mullay .	Baron von Massow.
40	195	28 <u>3</u>	342	31	Travancore .	A. Lampard.
40	19‡	26	$34\frac{1}{2}$	32	Burma	A. E. English.
40	17	314	34	$27\frac{1}{2}$	E. Madras .	W. O. Horne.
40	15	334		26	Central Provinces	C. F. Egerton.
394	18 ⁷	34‡	35‡	26.1	?	R. McD. Hawker.

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Widest outside.	Circum- ference at base.	Tip to Tip.	Widest inside.	Length on outside curve of longer horn.	Locality.	Owner.
39½	20	251	$33\frac{1}{2}$	31	Anamalais .	C. W. Wood.
39₺	17	301	$34\frac{1}{2}$	28.1	?	Major F. C. Samborne-
$39\frac{1}{2}$	201	31	33½	27½	?	Palmer. Capt. E. W. Thompson.
$39\frac{1}{2}$	181	22	321	$33\frac{1}{2}$?	A. M. Leake.
383	$17\frac{1}{2}$	25 3	$32\frac{3}{4}$	30	?	A. H. Sharp.
38‡	174	$28\frac{1}{2}$	$33\frac{1}{2}$	27 3	Cooch Behar .	H. R. Beaumont.
38	18	$22\frac{1}{2}$	33	313	Madras	S. Cox.
38	18	231	32	29	Burma	H. E. Beamish.
38	19	18	31	$34\frac{1}{2}$?	Sir Edmund G. Loder, Bart.
38	$19\frac{1}{2}$	24	31½	31	?	Rev. H. C. B. Stone.
37 5	171	30₹	32	$24\frac{1}{4}$?	Capt. A. C. H. Trevor.
$37\frac{1}{2}$	$20\frac{3}{4}$	33	33 1	25	Burma	Capt. T. A. Headlam.
$37\frac{1}{2}$	171	$27\frac{1}{2}$	$32\frac{3}{4}$	253	?	G. Sandeman.
$37\frac{1}{2}$	18	19	324	31	?	Colonel Baillie.
$37\frac{1}{4}$	182	$26\frac{1}{2}$	313	28	Central Provinces	J. C. T. Fairweather.
374	20	25	31‡	2 9	Chutia Nagpur District	LieutCol. J. W. Yardley.
37	171	$31\frac{1}{2}$	33	24	?	Duke of Sutherland.
$36\frac{1}{2}$	$21\frac{1}{2}$	221	2 9 $\frac{3}{4}$	28	Pahang	J. Scott Mason.
$36\frac{1}{2}$	172	17		28	Mysore	Col. G. H. Evans.
$36\frac{1}{2}$	16	18	31	314	3	W. Evetts.
36½	184	26 <u>3</u>		$26\frac{1}{2}$?	LieutCol. R. H. Fraser.
36‡	181	$20\frac{3}{4}$	$29\frac{3}{4}$	29½	Marutha	J. G. Heyder.
36‡	185	$24\frac{1}{2}$	30₹	$27\frac{3}{4}$	Malay States .	G. Hemmant.
36	174	231	$29\frac{1}{2}$	28	S. India	Capt. C. S. Timins.
36		$2I\frac{1}{4}$	314	$24\frac{1}{2}$	Malay States .	H. E. Stewart.
931	$14\frac{3}{4}$	$20\frac{3}{4}$	26¼	$24\frac{3}{4}$?	Capt. E. H. Wildblood.
♀ 27	131	13	22	24	N. Travancore.	British Museum (Hume Collection).
			OWNE	R'S MEA	SUREMENTS.	
	20			402	Belgaum	H. Murray.
46	$20\frac{1}{2}$	33	40		Malay States .	H. Da. Prah.
45 ¹ / ₈	$\scriptstyle \rm I7\frac{1}{2}$	36	$39\frac{7}{8}$	$33\frac{1}{2}$	N. Travancore.	G. E. Bewley.
44	201	23		40	Wynaad	F. Ditmas.
433	18	33	38	31	Burma	G. H. Bell.
43½	17₹	28 ³ / ₄			Travancore .	H.H. the Maharaja of Travancore.

Widest outside.	Circum- ference at base.	Tip to Tip.	Widest inside.	Length on outside curve of longer horn.	Locality.	Owner.
43	201	183		394	Salwin, Burma	Bombay Natural History Society's Museum,
43	17	30§	•••	$29\frac{3}{4}$?	K. J. K. Juntke.
42 ½	181		341	301	Pegu, Burma .	Capt. W. F. Brayne.
$42\frac{1}{4}$	16 <u>3</u>	$32\frac{3}{4}$?	W. B. Drury.
42	22	$29\frac{1}{2}$		•••	Madras	C. W. G. Morris.
$41\frac{1}{2}$	17		•••	33	Burma	S. E. F. Jenkins.
$39\frac{1}{2}$	$20\frac{1}{2}$	28		$27\frac{1}{2}$	Duars	E. T. Partridge.
$38\frac{1}{2}$	20	23 ³ / ₄	32		S. Madras .	Capt. S. H. Charrington.

N.B.—In the following specimens the maximum width is *inside* measurement.

Widest inside.	Circum- ference at base.	Tip to Tip.	Length on outside curve of longer horn.	Locality.	Owner.
39	17₹	$28\frac{1}{2}$	$29\frac{1}{2}$	Siam	A. Waley.
374	$18\frac{1}{2}$	22	304	Travancore .	A. T. Mackenzie.
36	17	261	$27\frac{1}{2}$	Assam	L. Truninger.
36	15	$26\frac{1}{4}$	26	Central Provinces	Major John Fuller.
35	174	$20\frac{1}{4}$	$27\frac{1}{2}$	Tezpore, Assam	A. Y. Thomson.
35	18	23	26	Burma	Capt. S. L. Robinson.
34 ³ / ₄	18	$22\frac{1}{2}$	28	Assam	Hon. S. Tollemache.
$34\frac{1}{2}$	18	$23\frac{1}{2}$	33½	Cooch Behar .	H.H. the Maharaja of Cooch Behar.
34	181	2 0 ¹ / ₄	$27\frac{1}{2}$	Travancore .	LieutCol. the Hon. E. Baring.
34	15₹	$24\frac{5}{8}$	$24\frac{1}{2}$?	Major H. De Prée.
34	19	27	24	Burma	W. F. Loftus-Tottenham.
$33\frac{3}{4}$	18	$23\frac{3}{4}$	25	Kanara	LieutCol. G. J. Fitzgerald.
$33\frac{1}{2}$	18	1 5₹	$28\frac{1}{2}$	Travancore .	Capt. H. L. Cottingham.
33½	15	22	23	Assam	Col. E. T. Paul.
323	$17\frac{1}{8}$	324	27 g	Central Provinces	Major C. S. Cumberland.
323	182	23 ³ / ₈	26	Do.	Major G. de H. Smith.
321	19	165	26	Do.	Major C. F. Pinney.
321	171	218	313	Travancore .	British Museum (Hume
Ç 22	$10\frac{1}{2}$	145	22	?	Collection). Major H. De Prée.

MEASUREMENTS OF ENTIRE SPECIMENS FURNISHED BY H.H. THE LATE MAHARAJA OF COOCH BEHAR.

REMARKS.	Record head shot Cooch Behar.			Record bull as regards bulk and height.	Record cow's head—looked like a bull a little way off.
Girth just behind shoulder.	ins. 118	120	120	124	06
Length of body between sticks.	ft. ins.	9 44	9 52	$\frac{6}{2}$:
Total length of Length of animal between body between sticks.	ft. ins.	12 34	12 2	$12 3\frac{3}{4}$:
Height at the hump.	hds. ins. 19 3	20 3	19 $3\frac{1}{2}$	20 04	17 3
Height at shoulder.	hds. ins. $18 2\frac{1}{2}$	18 3½	18 3	18 34	$17 1\frac{1}{2}$
Widest splay.	43	40 3	39	39	:
Between tips.	314	$23\frac{1}{2}$	$23\frac{1}{2}$	264	:
Base of horn.	21	18‡	193	$20\frac{1}{2}$:
Horns, Tip to Tip, round outer curves,	84	813	78½	$76\frac{1}{2}$	734
One horn round outer curves.	:	$32\frac{1}{8}$	$30\frac{7}{8}$	300	:
Sex.	Bull	33	33	93	Cow



Skull and Horns of Gayal. From a specimen bequeathed to the British Museum by the late Mr. A. O. Hume.

B.- DOMESTICATED BREED or GAYAL.

The gayal is a rather smaller animal than the wild gaur, nearly black in colour, with a large dewlap, and a straight line between the bases of the massive horns, which are but little divergent, curved upwards, nearly cylindrical in section, and of dark colour. The head is short, with the forehead broad and flat. It is a domesticated breed of the gaur, probably derived from the Malay and Tenasserim race of the latter.

Distribution.—Kept in a semi-domesticated condition by many of the hill-tribes of Assam, Chittagong, etc.

Length on outside curve.	Circum- ference.	Tip to Tip.	Loc	ality.		Owner.
17‡	17	41		3		British Museum.
15	II $\frac{1}{2}$	26 3 8		?		Do.
142	13½	28	Tenasserim	٠		British Museum (Hume Collection). See illustration.
		OW	NER'S ME	ASURI	EMEN'	TS.
223	12	42	Assam			E. C. Stuart Baker.
16	$14\frac{1}{2}$	301	Mishmi			Bombay Natural History Society.
14	14			:		Indian Museum.



Head of Tsaine or Burmese Bantin. From a specimen shot by Maj.-Gen. H. D'U. Keary.

The BANTIN or TSAINE (Bos [Bibos] sondaicus).

This member of the gaur group departs somewhat less widely from the normal type of cattle than does the gaur, the ridge on the withers being less developed, and the horns almost cylindrical. The cows are always reddish coloured, although the bulls may be black, and in the latter sex at least there is typically a large white patch on the rump. Very distinctive of the species is the presence of a horny shield on the crown of the head connecting the bases of the horns. Height at shoulder, about 5 feet 9 inches. The humped cattle of India are probably domesticated derivatives of the bantin.

Distribution.—Burma, the Malay Peninsula, Siam, Borneo, Java, Bali, and perhaps Sumatra. Several distinct races of the bantin are distinguishable. First, the true bantin, or Java ox (B. sondaicus typicus), from Java, and perhaps some of the other Malay islands and the Peninsula. In this race the old bulls become of a deep blackish-brown colour. The same tint is characteristic of the adult male Bornean bantin (B. sondaicus lowi), but the horns are directed more uprightly. A third race is the tsaine (B. sondaicus birmanicus), which inhabits Burma, and may extend northwards to Manipur. Old bulls generally retain the fawn-colour of the cows

throughout life, showing more or less of grey on the head, but it is stated that very old individuals are occasionally nearly black. The Siamese tsaine, which, in at least some individuals, is profusely speckled with white, has been named *B. s. porteri*. Another race is represented by the Cochin China tsaine, of which the general colour is orange.

		0					
Length on outside curve.	Circum- ference.	Tip to Tip.	Widest inside.	Widest outside.	Locality.		Owner.
$34\frac{1}{2}$	$11\frac{7}{8}$	21	$32\frac{1}{2}$	$36\frac{3}{4}$	Cochin China .		H.R.H. the Duc de Montpensier.
$31\frac{1}{2}$	$16\frac{1}{2}$	$2I\frac{1}{2}$	314	36 1	Upper Burma.		H. W. James.
30	161	$24\frac{1}{2}$	32		Do		Capt. H. W. Marsden.
29	13	243	334	37 ³ / ₄	Do		Capt. W. R. Savage.
29	16	28	343		Burma		H. L. P. Walsh.
281	17 ³	$28\frac{1}{2}$	34		Do		W. O. Hannyngton.
281	163	40 ³ / ₄	40 3		Do		Capt. T. A. Headlam.
28	15	193	$29\frac{1}{2}$	35	Do		Capt. L. E. Burne.
27 ³ / ₄	143	191/2	301	35	Do		Capt. J. M. Stewart.
271	15	341	383	42 §	Do		MajGen.H.D'U. Keary.
-/+	- 3	374	204	7-8	200, , ,		(See illustration, p. 445).
27	$14\frac{1}{2}$	201	$28\frac{1}{2}$		Upper Burma.	٠	British Museum (R.McD. Hawker).
27	$17\frac{3}{4}$	243	32 3		Do		J. McF. Petters.
27	163	234	$29\frac{3}{4}$	$34\frac{1}{4}$	Do		P. Grace.
$26\frac{1}{2}$	$16\frac{1}{2}$	$21\frac{1}{2}$	28		Java	٠	Sir Edmund G. Loder, Bart.
$26\frac{1}{2}$	$14\frac{1}{4}$	$24\frac{1}{2}$	32		Lower Burma.		S. F. Hopwood.
$26\frac{1}{2}$	16	22	$30\frac{1}{2}$	$35\frac{1}{2}$	Do		T. Norman.
26	163	32	35	$39\frac{3}{4}$	Burma		Major C. P. Gunter.
253	165	$20\frac{7}{8}$	$26\frac{3}{4}$		Siam		H. C. V. Hunter.
$25\frac{3}{4}$	178	13	24		Burma		Major C. S. Cumberland.
25	15	228	28	32 3	Java		Hon. Walter Rothschild.
24½	16	$2I^{\frac{1}{2}}$	281	33	Do		Capt. L. P. Haviland.
241	I43	22	28	32½	Do		M. Maxwell.
24	16	25	30	33½	?		E. V. Ellis.
234	14	21 1/2	11	26¦	Java		British Museum.
23	16 <u>3</u>	30	293		Do		C. W. A. Buma.
Ŷ 23	121	16‡	25		Upper Burma .		R. McD. Hawker.
\$ 22\frac{1}{2}	131	151	23		Java		C. W. A. Buma.
22	141	11½	20 1	24 ¹ / ₂	Borneo	•	H. P. Perry.
22	*44	112	204	-4 2	Domeo	•	11. 1. 1 (11).
			OWNE	CR'S ME	CASUREMENTS.		
$33\frac{1}{2}$	17	26 7	35		Upper Burma.		LieutCol. H. S. Wood.
301	153	273	36		Do		S. E. F. Jenkins.
30	17				Java		Indian Museum.
30	151	20	384		Burma		Bombay Natural History
					Do		Society.
29	155	24	33		Do	•	J. P. Cook.
281	175	302	36		Do	٠	LieutCol. G. H. Evans.
281	15	261	363		Do		H. Van Son.
271/2	18	292	~	402	Do		J. E. F. Marshall.
$27\frac{1}{2}$	15	23½	328	37 g	Do		Capt. C. H. Elliot.
27.‡	148	24.1	334	37 18	Do	٠	Capt. W. F. Brayne.
24	162	24	283		Borneo		P. C. Brackenbury.



Skull and Horns of Lake Chad Ox. Presented to the British Museum by Capt. A. C. Aubin.

DOMESTICATED CATTLE (Bos taurus and B. indicus).

The ordinary domesticated cattle of Europe, such as the Spanish fighting bull, the Kerry, Pembroke, Highland, and Jersey breeds, are the descendants of the primitive wild ox, or aurochs (a name frequently misapplied to the bison) of Europe and North Africa (Bos taurus primigenius), now completely extinct in the wild state, although it survived in Poland till the sixteenth century. On the other hand, some of the large light-coloured cattle of Southern Europe, such as the draught-oxen of Northern Spain, and the cattle of Italy, Greece, and Hungary, appear to be derived from the zebu, although some have been crossed with North European cattle. Their horns are unlike those of the aurochs. The zebu or humped cattle of India and the Galla and other large-horned cattle of Africa evidently represent a distinct species (Bos indicus), probably descended from the bantin. To the same species belong the Ankoli cattle of Uganda and the ancient Egyptian long-horned breed, as well as the trek oxen of the Cape, in all of which the hump is obsolete.

Length on outside curve.	Circum- ference.	· Tip to Tip.	Widest inside.	Locality.	Owner.
814	18 1	$103\frac{1}{2}$		Ngamiland	The late W. C. Oswell.
-3	17	100	124	Do.	A. Ohlsson.

⁻ Owner's measurements.

Length on outside curve.	Circum- ference.	Tip to Tip.	Widest inside.	Locality.	Owner.
57	17	72		South Africa	W. A. Simpson Hinchliffe.
57	$19\frac{1}{2}$	82		Bechuanaland	Sir Edmund G. Loder, Bart.
$56\frac{1}{2}$	$17\frac{1}{2}$	76 1		South Africa.	R. A. Cooper.
56		101		Ngamiland .	British Museum.
$52\frac{1}{2}$	$25\frac{1}{2}$	40		Bahr-el-Ghazal	British Museum (Capt. F. W. Woodward).
50	18	93		Natal	British Museum (Col. H. W. Feilden).
$48\frac{7}{8}$	163	67		German E. Africa	Berlin Museum.
47	15 5	211		Gallaland .	British Museum (Sir H. Salt).
$42\frac{1}{8}$	23 5	$22\frac{1}{8}$			British Museum (Capt. Clapperton, R.N., and Col. Denham).
41章	14	52 3		Madagascar .	Bethnal Green Museum.
$4I\frac{1}{2}$	27	$45\frac{1}{2}$		N. Nigeria .	British Museum (Capt. A. C. Aubin). (See illustration, page 447.)
$41\frac{1}{2}$	$14\frac{1}{2}$			Ankoli	British Museum.
401	121	60 7		Vienna (Polish Bull)	Do.
$39\frac{1}{2}$	15	511		Uganda .	C. Craig.
$-38\frac{5}{8}$	$12\frac{5}{8}$	$53\frac{7}{8}$		Hungary .	Dr. Albert von Stephani.
$38\frac{1}{2}$	$10\frac{1}{2}$	$54\frac{3}{4}$		Italy	Bethnal Green Museum.
373	12	60		Cape of Good Hope	British Museum.
$31\frac{1}{2}$	101	$23\frac{3}{4}$		Gallaland .	A. E. Butter.
31	18	$32\frac{1}{2}$		Nigeria .	P. M. Dwyer.
30 g	123g	35		Spain	British Museum.
29 3	I I ½	2 8 $\frac{7}{8}$		Gambia .	British Museum (13th Earl of Derby).
$24\frac{1}{2}$	$8\frac{3}{4}$	15‡		Mysore .	British Museum.
I 7 ½	10 ³ / ₈	$30\frac{1}{2}$		Buenos Aires (Niata Breed)	British Museum (G. Claraz).

⁻ Owner's measurements.

The following specimens belong to British white park-cattle, which, although now half wild, are the descendants of domesticated breeds, probably nearly allied to the Pembroke:—

Length on outside curve.	Circum- ference.	Tip to Tip.	Widest inside.	Locality.	Owner.
185	$9\frac{1}{2}$	36½		Charțley Park	Hon. Walter Rothschild.
18½	7	344		Do.	Major James Grant.
182	103	20	$2I\frac{1}{8}$	Chillingham Park	British Museum (Earl of Tankerville).
\$ 184	7	108	158	Do.	Do.
15‡	98	178	181	Do.	British Museum (Duke of Hamilton).
15	$7\frac{1}{2}$	20 ³		Chartley Park	Capt. G. W. Hill, R.N.

The HIPPOPOTAMUS (Hippopotamus amphibius).

Gumari, Abyssinian.	Robi, Galla.	Jir, Somali.
Ikubu, Basuto.	Dorina, Hausa.	Kiboko, Swahili.
Zee-koe, Boer.	Macow, Masai.	Imvubu, Swazi.
Mourvu, Chilala.	Tumunto, M'Kua.	Moubu, Waganda.
Dul, Danakil.	Girinti, Sudanese.	Chivhubwe, Chila.

Such a familiar animal as the uncouth and unwieldy hippopotamus —the largest member of the swine group—requires but little in the way of description here. It is distinguished from the pigs and warthogs by the broad and rounded muzzle—so unlike the disc-shaped snout of the latter—and consequently typifies a family by itself. The tusks and molars are likewise of a totally different and distinctive type; while the feet have four sub-equal toes with symmetrical, rounded nails. In all its organisation the hippopotamus is beautifully adapted for a semi-aquatic life; the eyes and nostrils forming the highest points of the head, and thus allowing it to come up and breathe with the least possible exposure of its body. The weight of a fullgrown bull hippo is at least three tons, and the total length about 14 ft. Height at shoulder, about 3 ft. 10 ins. Hippos are chiefly hunted for the sake of their hides, which are manufactured into sjamboks, or raw-hide whips. Their tusks also have a certain commercial value. although not so great as formerly, when they were employed for artificial teeth.

Distribution.—Formerly this animal frequented most of the rivers of Africa south of the Sahara, but it has long since been exterminated from the lower reaches of the Nile, and is daily becoming scarcer in the South African rivers. In the Zambesi, where it is less easily attacked than in the smaller rivers of Mashonaland, it is still abundant, as it also is in the Chobi and neighbouring rivers, as well as in Lake Ngami; and even in the lower reaches of the Orange River a few are still to be met with. North of the Zambesi these animals occur in great numbers.

Lower Curved Tusks, or Canines.

Length round outside curve.	Circum- ference.	Weight.	Locality	7•		Owner.
$64\frac{1}{2}$	$7\frac{1}{4}$		E. Africa			Sir F. J. Jackson.
1 541	63		B.E. Africa			Dr. G. A. Macdonald.

¹ Malformed.

Length round outside curve.	Circum- ference.	Weight.	Locality.	Owner.
$41\frac{1}{2}$	8‡		S.E. Africa	Hon. Walter Rothschild.
141	8		Tana River, East Africa .	J. Benett Stanford.
² 37 ¹ / ₂	8‡		Shiré River	Capt. A. T. Hunt, R.N.
35 34₹	9 9‡	8 lbs. $7\frac{3}{4}$,,	Sudan	Capt. J. A. Pollock.
33	$9^{\frac{1}{2}}$		N.W. Rhodesia	K. C. North.
32	$9\frac{1}{2}$		Lualaba, Central Africa .	S. L. Hinde.
313	$6\frac{3}{4}$		B.C. Africa	F. W. Bowman.
313	$10\frac{3}{8}$?	The late Sir Clement Hill.
315	$9\frac{1}{8}$?	Sir Edmund G. Loder, Bart.
311	9		?	E. L. Fletcher.
31	10		N.E. Rhodesia	G. M. E. Leyer.
30 <u>₹</u>	91		Abyssinia	D. P. MacGillivray.
30½	7 ³		Sierra Leone	Major G. S. McLaughlin.
30	9		Shiré River	Surgeon J. Dowson, R.N.
30	9		Zambesia	E. W. Tompson.
30	9		British Central Africa	R. M. Irwin.
28 ³ / ₄	81		Gold Coast	H. J. Hobbs.
3 22	$9^{\frac{1}{2}}$		N. Nigeria	F. B. Shafto.
		OV	VNER'S MEASUREME	NTS.
1 51	9		S.E. Africa	. J. Lamont.
² 38		•••	Nyasaland	. Major P. W. Forbes.
30½	8		Lower Zambesi .	H. M. von Archer.
$29\frac{1}{2}$			N. Nigeria	. Capt. C. F. Watson.
		Lower	Straight Tusks, or	Incisors.
2112	$7\frac{3}{4}$		Abyssinia	. D. P. MacGillivray.
20 ³ / ₈	63		Lower Zambesi .	. Sir Edmund G. Loder, Bart.
19½ 19	$7\frac{1}{2}$ $7\frac{1}{2}$	$3\frac{3}{4}$ lbs. $3\frac{1}{2}$,,	Sudan	. Capt. J. A. Pollock.
18½	61/2		Nigeria	. Major J. A. Burdon.
184	71		N.W. Rhodesia .	. K. C. North.
1 Malfo	ormed.	² Malf	ormed and protruding from jaw	³ Protruding from gum.



Young Pigmy Hippopotamus.

PIGMY HIPPOPOTAMUS (Hippopotamus [Chœropotamus] liberiensis).

The pigmy hippopotamus of Liberia and the adjacent parts of the West Coast, measures only about 6 feet in length, and has habits approaching those of a pig. It also differs from the typical species by having, as a rule, only one pair of incisor teeth between the tusks, in place of two pairs, as well as in the relative size of the head and the conformation of the limbs.

Measurements of a specimen shot near Salon, on the Mauwa River, about 2 miles from the Liberian frontier:—

Length	from nose	to tip of	tail			781	ins.
Height	at withers					37	ins.
Girth b	ehind shou	lders				56	ins.
Weight	about	•				600	lbs.
Curved	tusks meas	sured $3\frac{5}{8}$ a	and $3\frac{3}{8}$ in	is. (proje	cting		
	om skull);					$3\frac{3}{8}$	ins.
Skull measu	rements of	a Liberia	ın specim	en in the	Tring	Muse	eum :—
Length						$13\frac{1}{8}$	ins.
Width							ins.
Weight					•	5	lbs.
Tusks. Total length.	Girth.		Locality.	(Owner.		
8	2 ⁵ / ₈		arcies River rene District		. I. Carte	er.	

Sierra Leone

8

23



Head of Wild Boar.

The WILD BOAR (Sus scrofa).

The European wild boar is a large coarse-haired species usually with an under-coat of woolly fur, no warts on the face, and standing from about 33 to 36 inches at the shoulder. It often lacks the crest or mane of long black bristles running from the nape down the back in its Indian cousin. Hungarian and Russian wild swine represent a race (S. scrofa attila) distinguished by its large size; and several other local races have been named.

A Spanish boar killed by H.R.H. the Duc d'Orléans weighed 302 lbs.

Distribution.—Europe, North Africa, and South-Western and Central Asia.

Tusks.

	th on curve. Left.	Length of tusk out of gum.			Locality	y.		Owner.
13			Albania					Lord Brackley.
12		• •	Do.					Lord Carnegie.
98			Andalucia					H.R.H. the Duc de Montpensier.
$9\frac{3}{4}$			Asia Minor	r				Admiral Sir Michael Culme-Seymour, Bart.
$^{1}9_{8}^{5}$			Caucasus				-	Prince E. Demidoff.
$9\frac{1}{2}$			Do.					Do.
9			Albania					Sir Reginald Cathcart, Bart.
8	$2\frac{1}{2}$		Russia					Count J. Potocki.
			OWNER	'S	MEA	SU	REM	IENTS.
13			New Zeala	nc	l (intro	duce	d).	G. W. Campbell.
11 1 ½			Caucasus					Col. Veernhof.

1 Weight, 372 lbs.

Length or outside curv Right.	re. t	ength of usk out of gum.	Locality.	Owner.
111			Caucasus	Major Robert Finnie.
11			New Zealand (introduced) .	H. J. Mussen.
83			Hungary	Count G. Andrássy.
85			Algeria	Sir Edmund G. Loder, Bart.
181	81/8	3	Near Bona, Algeria	Viscount Edmond de Poncins.
81/8			Algeria	LieutCol. J. Marriott.

¹ Weight, 275 lbs. clean.

INDIAN WILD BOAR (Sus cristatus).

This species is allied to the typical wild boar, from which it is distinguished by the strong development of the dorsal crest and the rather more complex character of the last lower molar tooth. Other and more distinct species, such as *S. vittatus*, *S. verrucosus*, and the long-snouted *S. barbatus*, inhabit the Malay countries.

T amouth am

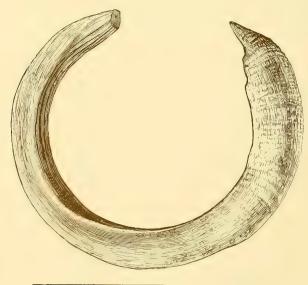
Length on outside curve.	Weight.		L	ocalit	y.		Owner.
125		Gosrama					V. N. Hickley.
$12\frac{1}{2}$		Upper Ass	am				J. D. Berrington.
II 1 8					}		C. F. Knyvett.
10 5		Kotri Dun					T. H. Carlisle.
$10\frac{8}{3}$		Assam					N. Williamson.
101		Meerut					A. F. Brooke.
$9\frac{3}{4}$?		Dr. Travers.
$9\frac{1}{2}$		Burma					Langford Whitehouse.
$\binom{9^{\frac{1}{2}}}{9}$;		Major C. Gough.
98		North Kan	ara				LieutCol. L. L. Fenton.
$9\frac{3}{8}$		Central Pro	ovinc	es			LieutCol. J. S. Ashby.
9 1 8	• • •	Ceylon					Major F. H. N. Pym.
9	182 lbs.	Jhelam					Capt. W. F. Brayne.
834	• • •	Oudh					J. C. Faunthorpe.
83		Roorkee					C. Bovill.
85		Meerut					Capt. S. H. Charrington.

OWNER'S MEASUREMENTS.

Length on outside curve.	Weight.	Locality.			Owner.
I43		Behar, Purneah .			Capt. L. Cheape.
(malformed)		Purneah		٠	H. R. P. Carter, recorded in <i>Field</i> , 19th January 1895. (See illustration,)
148		Hills above Jamu			Col. Sir Neville Chamberlain.
108		North Kanara .			Bombay Natural History Society.
102		Burma			Mrs. O. F. Wheeler-Cuffe.
$10\frac{1}{2}$			3		Meerut Tent Club.
10		Ceylon			H. Storey.
93			?		Meerut Tent Club.

The following specimen belongs to one of the above-mentioned Malay species.

Length on outside curve.	Weight.	Locality.	Owner.
II		North Borneo	. C. P. Brook.





Abnormal Lower Tusk of Wild Boar.

The BUSH-PIG (Potamochærus chæropotamus).

Bosch-vark, Cape Dutch. Ingulubi, Swazi and Zulu.

The bush-pigs, or river-hogs, of Africa and Madagascar form a peculiar group of swine characterised by having only 42, in place of 44, teeth, small tusks, and the presence in old boars of two pairs of ridge-like prominences on the sides of the face, the lower one being on the sheath of the tusk. The ears are surmounted with tufts of long hair. The various species are best distinguished by the characters of their skulls, colour forming an uncertain guide. The Cape bush - pig, or bosch-vark, in which the upper prominences on the skulls of old boars are convex and raised above the line of the nose, is generally grey, although scarcely any two specimens exhibit the same colours, some being brownish black variegated with white, and others almost entirely light reddish brown or rufous, without any white markings. In British Central Africa they are invariably reddish, and form a distinct race, P. c. nyasæ. Height at shoulder, about 31 inches; weight, 35 lbs. Lower tusks average 6 to 7 inches long.

Distribution.—South and South-East Africa.

Leng	th.	Exposed	Locality.	Owner.	
Upper.	Lower.	from gum.	Locanty.		
$3\frac{1}{2}$	$6\frac{1}{2}$		N.E. Rhodesia	Hon. Walter Rothschild.	
		$4\frac{3}{8}$	P.E. Africa	F. Vaughan Kirby.	
Height at shoulder.		Weight.			
-231/4		35 lbs.	Shiré River, British Central Africa	Dr. Percy Rendall.	
			- Owner's measurements.		

The RED RIVER-HOG (Potamocherus porcus).

In this species the prominences on the skulls of adult boars are flat-topped, and do not reach above the line of the nose; the colour is always some shade of rufous, either shining brownish red with a tinge of yellow, or dark reddish yellow with black on the forehead, ears, and limbs, and the mane of the back, part of the margins of the ears, the tips of the long tufts of hairs with which they are surmounted, and streaks above and below the eyes white. Weight, 250-260 lbs., Nigeria (Major J. B. Cockburn).

Distribution.—West Africa.



Head of Forest-Hog. Shot by Lieut.-Col. J. W. Yardley.

The FOREST-HOG (Hylochærus meinertzhageni).

A huge black pig serving in some respects to connect the bush-pigs with the wart-hogs, although markedly distinct from both. The boars have a large fungus-like warty growth below each eye. Height at shoulder, 30 ins.; weight, 265 lbs. clean (Capt. F. L. Archer-Houblon).

Distribution.—Kenia, the Nandi Forest, and Abyssinia; represented by a local race in the Eastern Cameruns, and a third in the Ituri Forest.

Upper Tusks.

Total Length.	Protruding from gum.	Circum- ference.	Local	ity.		Owner.
$12\frac{1}{8}$		45	Kenia			G. St. J. Orde Browne.
	10 ⁷ 8	54	Mount Kenia			R. Kenyon-Slaney.
10} } 9³} ∫		45	Nandi Forest			Hon. Walter Rothschild.
947	81/2	$4\frac{3}{4}$	Mount Kenia			LieutCol. J. W. Yardley.
	84	54	Do.			British Museum.
	$7\frac{1}{2}$	44	Do.			E. B. Horne.
	$7\frac{1}{2}$	54	Do.			G. C. Slacke.
			Lower T	usks.		
97		28	Kenia			G. St. J. Orde Browne.
87 }		$3\frac{1}{2}$	Nandi Forest			Hon. Walter Rothschild.
	$6\frac{3}{4}$	31/2	Do.			British Museum.
	$4\frac{3}{4}$	3	Mount Kenia			G. C. Slacke.
	54	3	Do.			LieutCol. J. W. Yardley.
	51	2;	Do.			R. Kenyon-Slaney.
	37	21/4	Do.			E. B. Horne.



Tusks of Wart-Hog in American National Collection.

The WART-HOG (Phacocherus æthiopicus).

Bango or Nguruwi, Swahili. Hallūf, Sudani.

Ikulubi, Basuto.

Indaigazana, Swazi and Zulu.

Karkari, Somali.

Ngolobwi, Barotsi and Ngami. Njiri or Injiri, Chilala and Chibisa.

Vlak-vark, Boer.

Gado and Darunga, Hausa.

Ngron, M'Kua.

Shaukoli, Chila.

For downright ugliness the African wart-hog is hard to beat, and as it is well armed and possesses a bad temper, it is in all respects an undesirable acquaintance. The name is derived from the presence of two pairs of wart-like protuberances on the sides of the face between the eyes and the tusks; the head itself being characterised by the disproportionate length and flatness of the face. Unlike typical pigs, the stout upper tusks are longer than the lower pair; the inferior surfaces of their basal halves being worn to smooth facets by the points of the latter. Another peculiarity of the upper tusks is that they have no enamel, except at the extreme tips, which are soon worn off by use. The last molar teeth of each jaw, which, together with the tusks, are often the only teeth remaining in very old animals, are large and tall-crowned, consisting of a number of closely-packed cylindrical columns of enamel, which, when worn, present a characteristic pattern.

This type of tooth is quite unlike that of ordinary pigs, in which the last molars are low-crowned and simple. Except along the neck and back, where it carries a mane of bristly hair, the skin is nearly naked; and the young differ from those of ordinary pigs in being neither striped nor spotted. Height at shoulder, 30 inches. Weight (Capt. R. Meinertzhagen), 210 lbs.

Distribution.—The wart-hog is typically an inhabitant of South and South-East Africa. Pigs of the same genus extend, however, right through East and Central Africa to Abyssinia; those from the latter country forming a local race (P. æthiopicus africanus). Wart-hogs, possibly from their habit of going to ground when pursued, are but seldom hunted with the spear; "pig-sticking" being, in fact, a sport practically unknown in Africa. The lower tusks seldom exceed 6 inches on the front curve.

Upper Tusks.

Outside spread.	Length on outside curve.	Length exposed from gum.	Locality.	Owner.
	$22\frac{1}{8}$	21	Uganda	Rev. A. B. Fisher.
	22		?	J. N. Coute.
		16	South Africa	W. A. Simpson Hinchliffe.
34		155	Do	Sir Edmund G. Loder, Bart.
		$15\frac{1}{2}$	British Central Africa.	A. J. Swann.
		$14\frac{1}{2}$	N.E. Rhodesia	H. Cookson.
	174	15½	East Africa	R. S. Meikle.
	171		Portuguese Nyasa .	C. F. Tristram.
	$16\frac{1}{2}$	$12\frac{1}{2}$	East Africa	Capt. the Hon. O. H. Stanley.
	$16\frac{1}{2}$		Do	Capt. V. C. de Crespigny.
	I 5½	15 §	N. Nigeria	Capt. C. F. Watson.
	158€	15	East Africa	A. J. A. Douglas.
	154	13	Somaliland	Major K. L. W. Mackenzie.
	15½		N.E. Rhodesia	F. H. Melland.
		134	S. Rhodesia	C. W. Adams.
		135	East Africa	Mrs. J. E. R. Oldfield.
	15	I 3 ½	British Central Africa.	R. H. Storey.
	143		Do	John Yule.
	***	123	Do	Capt. C. J. Murray.
	148	12	Do	Dr. J. E. S. Old.
		121	Sudan	Lord Desborough.
	14	114	Do	Capt. A. C. Jeffcoat.
	137	II5	N. Nigeria	Capt. W. H. Wilkin.
	13 ₁₆		Somaliland	Major B. R. M. Glossop.
		13 1	East Africa	Walter Jones.
		13	South-East Africa .	F. C. Selous.
		$12\frac{1}{2}$	East Africa	Major H. W. Stevens
		121	Do	Percy C. Madeira.
		12	N.W. Rhodesia	J. Ripley.
		12	East Africa	C. W. Turner.
		II 5	?	J. Kingdon.
		112	N.E. Rhodesia .	P. M. Stewart.

Outside spread.	Length on outside curve.	Length exposed from gum.	Locality.	Owner.
		I I ½	East Africa	Gorham Brooks.
		111	Do	B. Dominick.
		ΙΙ	N.E. Rhodesia	Sir Philip Brocklehurst, Bart.
		ΙΙ	3	R. B. Loder.
		11	East Africa	F. Santos Saurez.
		\mathbf{IO}_3^{\ddagger}	Do	Major H. B. Dalgety.
		OWN	ER'S MEASUREMENT	cs.
$37\frac{7}{8}$	20	$16\frac{1}{2}$	South Africa	American National Collection. (See illustration, p. 457.)
	27 26 }		Annesley Bay	Capt. Ralph Berners, R.N.
	25		British East Africa .	C. S. Mann.
		$16\frac{1}{2}$	S. Nigeria	E. A. Martin.
•••		I I ½	Angola	W. C. Neilson.
			Lower Tusks.	
	II 1 1/2		Somaliland	Major K. L. W. Mackenzie.
	$9\frac{1}{2}$		Do	J. D. Inverarity.
			- Owner's measurements.	



Head of Wart-Hog.



Head of Babirusa.

The BABIRUSA (Babirusa celebensis).

Pig-deer (to translate the Malay name) are not the least notable of several remarkable animals restricted to Celebes and Boru; the peculiar form and position of the upper tusks of the boars rendering them almost comparable to horns. Unlike those of other pigs, in which they curve upwards from the sides of the lips, the upper tusks pierce the skin of the upper part of the snout, and, as they are not worn by the lower pair, attain extraordinary dimensions. Both pairs are quite devoid of enamel, the lower ones growing from the sides of the jaw in the ordinary manner. The cheek-teeth are somewhat less numerous than in ordinary pigs. In other parts of their organisation babirusas are, however, very like the latter, although the nearly naked skin of B. celebensis is of a coarse and rugged nature, being almost comparable to the bark of a tree. The height at the middle of the back, the highest point of the animal, is about 42 inches. Unlike the rest of its tribe, the female babirusa produces only a pair of young at a birth, which are of the same uniformly slaty hue as their parent. Babirusa are confined to the islands of Celebes and Boru, where they afford good sport to the natives, who drive them into nets and then spear them. The Boru species (B. alfurus) is clothed with greyish hair, and also differ in the character of the skull and tusks from the Celebes B. celebensis.

Dr. Guillemard, in the Cruise of the "Marchesa," recorded the following weights and dimensions:—

Weight, male, 128 lbs.; female, 85 lbs. Height at shoulder, $27\frac{1}{2}$ ins.; female, $25\frac{1}{2}$ ins.

Tusks.

Upper.	Length. Lower.	Owner.
16 ³	13½	Rowland Ward.
$14\frac{3}{4}$	12	M. Maxwell.

OWNER'S MEASUREMENTS.

17		H. Van Son.
$14\frac{1}{2}$		Dr. F. H. H. Guillemard.
134	15	Imperial Museum, Vienna.
II	8 <u>5</u>	Dr. Albert von Stephani.



Record Horn of Great Indian Rhinoceros. Shot by the late T. Briscoe.

The GREAT INDIAN RHINOCEROS (Rhinoceros unicornis).

In addition to being the giant among its Asiatic kindred and possessing only a single horn, this species is specially characterised by the form of the folds in its hide, and the large tubercles on the foreand hind-quarters, which look as though the skin had been fastened to the body by means of rivets. Folds before and behind the shoulder mark off one large triangular shield on each side, while another fold before each thigh separates a large rump-shield; the saddle-shaped body-shield being defined by the fold behind the shoulder and the one in front of the thigh, both of which extend across the back. Very characteristic, too, are the great folds which form heavy rings of skin round the neck. Although the tubercles are largest on the fore- and hind-quarters, they also occur on other parts of the body. Height at shoulder, from 5 feet 8 inches to over 6 feet; girth behind shoulder, 105 inches. Weight of living animal, 1010 lbs. (New York Zool. Soc.).

Distribution.—The Assam plain and the Tarailand of Nepal and some of the adjacent territories. Formerly this rhinoceros was found over the greater part of the Indian peninsula, as attested by fossil remains. There is evidence of the occurrence of a more or less nearly related rhinoceros, apparently with two horns, in the Singpu district of Upper Burma.

Length on front curve.	Circum- ference.	Weight.	Locality.	Owner.
24	$24\frac{3}{4}$		Assam	. British Museum (the late T. Briscoe).
191	$22\frac{3}{8}$		Assam (?)	. Ipswich Museum.
183	231	4 lbs. 9 oz.	Assam	. D. H. Felce.
₽ 18	16		Do	. The late M. H. Logan.
$16\frac{3}{4}$			Belsire, Assam .	. W. C. Sherwill.
♀ 16¼			Cooch Behar .	. H.H. the Maharaja of Cooch Behar.
5 16		$3\frac{1}{2}$ lbs.	Nowgong, Assam	. L. Fabre Tonnerre.
15	$22\frac{3}{4}$		Nepal	. Dr. T. G. Longstaff.
144	21		Assam	. Dr. W. P. Y. Bainbrigge.
♀ 14	22 ⁷ / ₈	4½ lbs.	Nowgong, Assam	. L. Fabre Tonnerre.
$13\frac{1}{2}$	22		Nepal	. His Majesty The King.
13	20		Do	. Capt. M. L. Pears.
13	$20\frac{1}{2}$		Assam	. G. A. Dolby.
13	$20\frac{3}{4}$		Do	. W. A. Doxat.
$12\frac{3}{4}$	23		Do	. H. B. Firman.
$\mathbf{I2}^{\frac{1}{2}}$	21 <u>5</u>		Do	. H. C. Holland.
$12\frac{1}{2}$	21		3	J. W. Grieve.
12	$21\frac{1}{2}$		Cooch Behar .	. A. Ezra.
12	$21\frac{3}{4}$		Nepal .	. Major Lord Charles M. Nairne.
113	193		Do	. H.S.H. the Duke of Teck.
		07	WNER'S MEASUR	REMENTS.
2112	24 ³ / ₄		Nepal	. Lord Curzon of Kedleston.
137			Cooch Behar .	. H.H. the Maharaja of Cooch Behar.
1 13			Do	. Do.
13			?	Indian Museum, Calcutta.
$12\frac{1}{2}$	$15\frac{1}{2}$		Cooch Behar .	. Col. J. J. Harrison.

1 Height at shoulder, 6 ft. 6 ins.



Javan Rhinoceros. Shot by Mr. M. Maxwell.

The JAVAN RHINOCEROS (Rhinoceros sondaicus).

A less gigantic and smaller-headed species than the last, with the skin marked by a kind of mosaic pattern, and the fold in front of the shoulder continued right across the body like the two hindmost folds. The neck also lacks the large ring-like masses of folded skin. Horn never very large, and generally almost or completely wanting in the female. A female has been measured which stood $5\frac{1}{2}$ feet at the shoulder, and it is probable that the male is not much inferior in height to the Indian species, although of lighter build.

Distribution.—The Sanderbans and other parts of Eastern Bengal, to the Tarai, Sikhim, Assam, and thence through Burma and the Malay Peninsula to Sumatra, Java, and Borneo.

Length on front curve.	Circumference.		Loc	cality.		Owner.
104	20	Java				M. Maxwell. (See illustration).
105	195	Do.				T1 1 1 1 1 1 1 1
105	19½	Do.				H. Van Son.
81	20	Do.	,			A. S. Campbell.



Front Horn of Sumatran Rhinoceros. Shot by Mr. G. F. W. Curtis.

The SUMATRAN RHINOCEROS (Rhinoceros [Ceratorhinus] 1 sumatrensis).

The smallest of the Asiatic rhinoceroses, and the only one with two horns; differing, however, from the African members of the genus by the presence of folds in the skin and of teeth in the front of the jaws. Only the fold behind the shoulders is continued across the back, and the brown or black skin is rough, granular, and more or less hairy. Height at shoulder, from about 4 feet to $4\frac{1}{2}$ feet; weight, about 2000 lbs.

Distribution.—From Assam (where the species is very rare) to Siam, the Malay Peninsula, Sumatra, and Borneo. The Assam animal is a distinct local race (R. sumatrensis lasiotis).

Lengt outside		Circumfe	erence.	Locality.	Owner.
Front.	Rear.	Front.	Rear.		
328		. 17 3		?	British Museum.
$27\frac{1}{8}$	•••	1778		?	Do.
15	$7\frac{1}{2}$	$17\frac{1}{2}$	17	Malay Peninsula	C. B. Smales.
11	$3\frac{1}{2}$	151	111	?	Sir T. S. Tancred, Bart.
7	$2\frac{1}{2}$	14	10	5	Capt. P. Hudson.
5	28/4	13	11	Burma .	 Capt. W. F. Brayne.

¹ An earlier name is Dicerorhinus, but this is too like Diceros, the subgeneric (or generic) name of the African rhinoceroses.



Mr. S. L. Hinde's Horns of Black Rhinoceros.

The BLACK RHINOCEROS (Rhinoceros [Diceros] bicornis).

Aurarissi, Abyssinian.
Abu Gesn-Khartyl, Sudani.
Chipamberi, Lower Zambesi.
Chipémberi, Chilala.
Fava, Swahili.
Gurhu, Danakil.
Muin, Masai.
Kifuvi or Marili, Hausa.

Megi, M'Kua.
Sipejana, Swazi and Matonga.
Upejana, Matabili and Zulu.
Upelepi, Basuto.
Wărtses, Galla.
Wil, Somali.
Zwart Rhinaster, Boer.
Shempola, Chila.

The African rhinoceroses are two-horned animals, distinguished from their Asiatic relatives by the absence or slight development of the folds of skin which form such a characteristic feature of the latter, and also by the lack of front teeth in both the upper and lower jaws. The hide, too, is almost completely naked, although there are some bristly hairs on the margins of the ears and the tip of the tail.

Perhaps the most distinctive external feature of the black rhinoceros, as the present species is commonly called, is to be found in the prehensile tip to the upper lip, which is rounded and not very wide in front. Other points of distinction are, however, shown by the form of the horns and ears and the position of the eyes; while in bodily size

this animal is also considerably inferior to the next. The black rhinoceros is likewise well characterised by the comparative shortness of its skull, and the form and structure of the cheek-teeth, which are adapted for a diet of twigs and leaves. Average height at shoulder, 5 feet. Weight (Capt. R. Meinertzhagen), I ton I cwt. I qr. 8 lbs.

Black rhinoceroses sometimes have more than the usual two horns. Gordon Cumming, for instance, records having killed a three-horned



Head of Black Rhinoceros.

specimen; and several others have been recorded from East Africa, including a five-horned specimen.

Distribution.—From Abyssinia and Somaliland through East and Central Africa, in suitable localities, to the Cape. Now rare to the south of the Zambesi, but probably more abundant in the districts between the interior of Somaliland and Lake Rudolf than anywhere else. Although more alert and active than the white rhinoceros, and thus a more dangerous animal, this species is by no means difficult to kill with modern weapons; and in the old days hunters frequently shot half-a-dozen in a single evening as they

came to drink at a pool. Of the local races at present named, the E. African *R. bicornis holmwoodi* is distinguished by the long and compressed front horn; while the Somali *R. b. somaliensis* is a relatively small form characterised by the proportions of the skull.

& Living animal, 602 lbs. (New York Zool. Soc.). ♀ ,, ,, 1080 ,, ,,

Lengt outside		Circumí	erence.				
Front horn.	Rear horn.	Front horn.	Rear horn,	Locality			Owner.
$53\frac{1}{2}$		181		East Africa			Dr. C. H. Orman.
47	$22\frac{1}{4}$	22	20	Do			S. L. Hinde.
44				Do			The late F. Holmwood.
$^{1}43\frac{1}{2}$		$2I\frac{3}{4}$		Congo-Uganda	L		Hon. Walter Rothschild.
43	•••	$2I\frac{1}{2}$		Boundary ?			The late A. Beit.
$41\frac{1}{2}$	10	$20\frac{1}{2}$	$16\frac{1}{2}$	Zululand .			The late LieutCol. the Hon.
40	143	$18\frac{1}{2}$	$20\frac{1}{4}$	Mt. Kenia, Bri Africa	tish E	ast	W. Coke. The late A. H. Neumann.
39	193	193	17	East Africa			E. B. Horne.
384		21		?			Hon. Walter Rothschild.
$38\frac{1}{2}$		19		Masailand .			Sir John Kirk.
♀ 35⅔	* * *	171		Do, .			Capt. G. H. Riddell.
35	111	21	20	East Africa			Capt. L. W. Sadlier-Jackson.
334	16	20	$19\frac{1}{2}$	Do.			T. P. Kempson.
9 33½		172		Matabililand			W. Van Ness.
33	22	$19\frac{1}{2}$	$20\frac{1}{2}$	East Africa			A. J. A. Douglas.
$32\frac{1}{2}$	16	22	19	Do.			Capt. R. Meinertzhagen.
311	I 2	161	16	Do.			G. St. J. Orde Browne.
31		18		Do.	,		R. P. Carroll.
\$ 31	132	184	18	Do.			W. Neilson.
31	192	16	16 ¹ / ₈	Do.		٠	H. C. V. Hunter.
$30\frac{1}{2}$	163	$21\frac{3}{4}$	$20\frac{1}{2}$	Do.			R. W. McKergow.
230	$21\frac{1}{2}$	$22\frac{1}{2}$	$23\frac{1}{2}$	Do.			LieutCol. the Hon. A. Greville.
30	$7\frac{3}{4}$	21	19^{1}_{2}	Do.			K. V. Painter.
$29\frac{1}{2}$	142			Somaliland			A. H. Straker.

¹ Determination provisional.

² Weight front horn, 13% lbs. Weight rear horn, 15 lbs.

Length outside o	on curve.	Circumfe	rence.				
Front horn.	Rear horn.	Front horn.	Rear horn.	Locality.			Owner.
29	$29\frac{1}{2}$	174	18	South Africa			R. B. Keeling.
29		19		East Africa			S. H. Christy.
$28\frac{1}{2}$	II_{4}^{3}	$20\frac{1}{4}$	$20\frac{1}{2}$	S.E. Africa			Dr. Sauer.
281	83	188	•••	South Africa			F. C. Selous.
28		231	•••	East Africa			F. Baden-Powell.
28	$7\frac{1}{2}$	173	181	Do.			F. C. Selous.
♀ 2 7 ³ / ₄	22	$19\frac{3}{4}$	$20\frac{1}{4}$	Do.			The Master of Belhaven.
271	10	21	17	Masailand .			The late Rear-Admiral R. A. J.
27	$\mathbf{I}2_{2}^{1}$	$24\frac{3}{4}$	20	East Africa			Montgomerie, R.N. Abel Chapman.
27		$20\frac{1}{2}$	***	Do.			E. Gedge.
27	$16\frac{1}{2}$	178	$17\frac{1}{2}$	Do.			Sir Robert Harvey, Bart.
27	12		***	Do.			Sir John Willoughby, Bart.
$26\frac{3}{4}$	$20\frac{1}{2}$	$21\frac{3}{4}$	19	Do.			W. N. McMillan.
$26\frac{1}{2}$	$10\frac{1}{2}$	192	15	Do.			Henry Charrington.
$26\frac{1}{2}$	$25\frac{1}{2}$	$18\frac{1}{2}$	19	Do.			H. Sampson.
$26\frac{1}{2}$	ĬI.	24	20	Do.		•	Col. A. Colville.
26	13	201	$23\frac{1}{2}$	Do.			C. Craig.
26	9	18	17	Do.			LieutCol. M. Tighe.
26	10	$20\frac{1}{2}$	19	Do.			F. W. Belt.
26	$13\frac{1}{2}$	$18\frac{1}{2}$	17	Do.			Stephenson R. Clarke.
26	$12\frac{3}{4}$	$17\frac{1}{2}$	173	Do.			H. S. L. Scott.
26	$16\frac{3}{4}$	$20\frac{1}{2}$	21	N.E. Rhodesia			P. M. Stewart.
26	19^{1}_{2}	113	22	N. Nigeria			Capt. N. K. Street.
26	I I 🖁	$23\frac{3}{4}$	22	East Africa			H. C. Allfrey.
258	$10\frac{1}{2}$	$20\frac{3}{4}$	$16\frac{1}{2}$	Nigeria .			Major J. G. Browne.
$22\tfrac{1}{2}$	$14\frac{1}{2}$	17	$16\frac{1}{2}$	Somaliland			Sir Abe Bailey.
$22\frac{1}{4}$	10	$22\frac{3}{4}$	19	Do.			The late Sir H. D. Tichborne,
22	634	174	16	Do.	٠.		Bart. Col. H. D. Olivier.
21 3	17	14	16	Abyssinia .			British Museum.
$20\frac{1}{4}$	•••	19‡	•••	Lake Chad			Capt. G. W. Moran.
19½	$9\frac{3}{4}$	18	14	Nigeria .			Capt. H. V. Venables Kyrke.

Length outside cu		Circumfere	ence.					
	Rear horn.	Front horn.	Rear horn.	Lo	cality.			Owner.
$17\frac{3}{4}$	8	163 4	15₹	Nigeria				Major J. B. Cockburn.
16	$9\frac{3}{4}$	17	153	Do.				P. E. Bradney.
$14\frac{3}{4}$	9	171	14	Benue, Nig	geria			Capt. E. J. Wolseley.
13	634	17‡	$16\frac{1}{2}$	Abyssinia				O. Neumann.
		(OWNE	R'S MEAS	SURI	EMEI	NT	S.
$44\frac{1}{2}$				East Africa	a			Imperial Museum, Vienna.
414		$22\frac{1}{2}$		Orange Ri	ver C	olony		Major - Gen. Sir William Crossman.
41					.5			Carl Hagenbeck.
40		22		East Africa	a			Berlin Museum.
39 ¹ / ₈		21½.		South Afri	ica			J. Lamont.
38	II	24	21 ³ / ₄	Do.				Earl of Dartmouth.
37	I $2\frac{1}{2}$	$20\frac{1}{2}$	${\tt I}{\tt 7}{}^{\frac{1}{2}}$	Uganda				Sir Edmund G. Loder, Bart.
36				East Africa	a			Sir Bartle Frere, Bart.
$35\frac{1}{2}$		18			?			H. Murray.



Head of Northern White Rhinoceros.



Skull and horns of White Rhinoceros from Lado in the possession of Sir Edmund G. Loder, Bart.



From specimens in the Collection of the late Roualeyn Gordon Cumming, in the possession of Col. W. Gordon Cumming.

The WHITE or BURCHELL'S RHINOCEROS (Rhinoceros [Diceros] simus).

Um Girin, Sudani.

Vit Rhinaster, Cape Dutch.

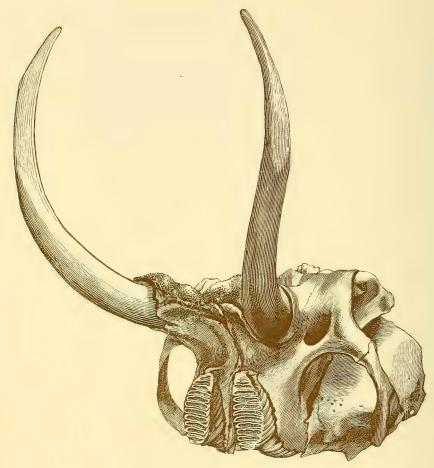
Next to the Indian elephant this is the largest existing land mammal. Its huge bulk, the bluntly truncate muzzle, which has no prehensile tip, the great length of the skull, and the enormous front horn, with its expanded base and flat front surface, form the most striking external characteristics of this species. The cheek-teeth are of a different type of structure from those of the preceding species, being, in fact, adapted for chewing grass. In walking, the animal carries its head low, so that in examples in which the front horn bends forward, its tip becomes worn by being pushed along the ground. It is stated that the colour of the skin is rather lighter than that of the black species.

Distribution.—South and South-East Africa, in suitable localities, as far north as the Zambesi; and again in Equatorial Africa at Lado, just north of the equator. Exterminated early in the last century to the south of the Orange River, and now represented in South Africa at the most by a few survivors in North-East Mashonaland, and possibly by others in the reedy swamps at the junction of the Black and White Umvolosi rivers. Between the Zambesi and Orange rivers the species was abundant about half a century ago; Andersson alone having killed sixty in the course of a few months. Its existence in Central Equatorial Africa was indicated by Sir Samuel Baker on the evidence of horns, and subsequently made certain in the neighbourhood of Lado by Major Gibbons. The northern race (R. s. cottoni) is distinguished by the proportions of the skull, and apparently by the sculpture of the skin.

A .- SOUTHERN or TYPICAL RACE.

	Length on outside curve. Circumference.							
Front horn.	Rear horn.	Front horn.	Rear horn.	Locality.		Owner.		
56분		23½ about	• • •	South Africa		British Museum.		
503	IO	25	22	Do.		W. N. McMillan.		
$46\frac{1}{2}$		27		Do.		Carl Hagenbeck.		
44		20		Do.		British Museum.		
434		233		Do.		The late A. Beit.		
$42\frac{3}{4}$		25 5		Limpopo		The late W. C. Oswell.		
403		293		South Africa		Sir Edmund G. Loder, Bart.		
$40\frac{1}{2}$		203		Do.		Hon. Walter Rothschild.		
$40\frac{1}{2}$		$22\frac{1}{2}$		Do.		Sir Edmund G. Loder, Bart.		

Lengt outside		Circum	ference.			
Front horn.	Rear horn.	Front horn.	Rear horn.	Locality.		Owner.
391		23		? East Africa .		Lord Delamere.
♀ 385		24½		South Africa .		The late W. C. Oswell.
384		221		Do		J. B. Taylor.
37 ³ / ₈	17 7	27 ½		Mashonaland .		F. C. Selous.
36		28½		Do		C. D. Rudd.
¹ 35 ¹ / ₂	$7\frac{5}{8}$	26	21	Mount Domo, shonaland	Ма-	South African Museum (late Cecil Rhodes).
33½	• • •	23	• • •		-	Sir Abe Bailey.
33	138	$23\frac{1}{4}$	•••	Mashonaland .		F. C. Selous.
314	84	26 3	26	Zululand .		J. C. Phillips.
31		22		Mashonaland .		J. G. Griffiths.
¹ ♀ 29 ³ / ₄	$5\frac{1}{2}$	23	$20\frac{1}{2}$	Zululand		Pretoria Museum (Julius Jeppe).
$^{1}22\frac{1}{2}$	$7\frac{1}{2}$	26‡		Mashonaland .		Hon. Walter Rothschild.
$^{1}20\frac{3}{4}$	7	28 <u>3</u>		Do		British Museum.
120	6	$25\frac{1}{2}$	$18\frac{1}{2}$	Zululand		H.R.H. the Duc d'Orléans.
59		$22\frac{1}{2}$	OWNI	ER'S' MEASURI	EME	NTS. Col. W. Gordon Cumming.
$52\frac{1}{2}$		$21\frac{1}{2}$		Do		Do.
41				Do		J. W. Fitzherbert.
	,	B.— N	ORTHI	ERN RACE (F	R. sin	nus cottoni).
41	11	B.— N	OR TH]	ERN RACE (F	R. sin	Major P. M. Dove.
41 40‡				·	R. sin	
		26	221	Mongalla .		Major P. M. Dove.
401		26 25	221	Mongalla . Bahr-el-Ghazal		Major P. M. Dove. Major F. G. Poole.
40½ 39		26 25 26‡	22 ¹ / ₄ 25 ³ / ₄	Mongalla . Bahr-el-Ghazal Do		Major P. M. Dove. Major F. G. Poole. Capt. C. Graham.
40½ 39 36½	 11 	26 25 26‡ 19‡	22\frac{1}{4} 25\frac{3}{4}	Mongalla . Bahr-el-Ghazal Do S. Sudan .		Major P. M. Dove. Major F. G. Poole. Capt. C. Graham. LieutGen. Sir B. T. Mahon.
40½ 39 36½ 36½		26 25 26 ¹ / ₄ 19 ³ / ₄ 27	$22\frac{1}{4}$ $25\frac{3}{4}$ $18\frac{1}{2}$	Mongalla . Bahr-el-Ghazal Do S. Sudan . Lado		Major P. M. Dove. Major F. G. Poole. Capt. C. Graham. LieutGen. Sir B. T. Mahon. The late G. G. Longden. H. Twyford. Major P. H. G. Powell-Cotton.
40½ 39 36½ 36½ 35	 11 14 13½	26 25 26 ¹ / ₄ 19 ³ / ₄ 27 21 ¹ / ₂	$22\frac{1}{4}$ $25\frac{3}{4}$ $18\frac{1}{2}$ $20\frac{1}{2}$	Mongalla . Bahr-el-Ghazal Do S. Sudan . Lado		Major P. M. Dove. Major F. G. Poole. Capt. C. Graham. LieutGen. Sir B. T. Mahon. The late G. G. Longden. H. Twyford.
40\frac{1}{4} 39 36\frac{1}{4} 36\frac{1}{4} 35 \$ 35	11 14 13 $\frac{1}{2}$ 10 $\frac{3}{4}$	26 25 26 ¹ / ₄ 19 ³ / ₄ 27 21 ¹ / ₂ 22 ¹ / ₄	$22\frac{1}{4}$ $25\frac{3}{4}$ $18\frac{1}{2}$ $20\frac{1}{2}$ $20\frac{5}{8}$	Mongalla Bahr-el-Ghazal Do. S. Sudan Lado Do. Do.		Major P. M. Dove. Major F. G. Poole. Capt. C. Graham. LieutGen. Sir B. T. Mahon. The late G. G. Longden. H. Twyford. Major P. H. G. Powell-Cotton.
40½ 39 36½ 36½ 35 935 33¾ 32½ 32	11 14 13 $\frac{1}{2}$ 10 $\frac{3}{4}$ 12 12 $\frac{1}{2}$	26 25 26 \(\frac{1}{4} \) 19 \(\frac{3}{4} \) 27 21 \(\frac{1}{2} \) 22 \(\frac{1}{4} \) 25 \(\frac{1}{2} \) 21 \(\frac{1}{2} \) 21 \(\frac{1}{2} \) 27 \(\frac{1}{4} \)	$22\frac{1}{4}$ $25\frac{3}{4}$ $18\frac{1}{2}$ $20\frac{1}{2}$ $20\frac{5}{8}$ 20 19 $25\frac{1}{2}$	Mongalla Bahr-el-Ghazal Do. S. Sudan Lado Do. Do. S. Sudan Lado .		Major P. M. Dove. Major F. G. Poole. Capt. C. Graham. LieutGen. Sir B. T. Mahon. The late G. G. Longden. H. Twyford. Major P. H. G. Powell-Cotton. The late Prince Paul Demidoff, Col. J. J. Harrison. Capt. the Hon. M. P. Macnaghten.
40½ 39 36½ 36½ 36½ 35 9 35 33½ 32½ 32	11 14 13 $\frac{1}{2}$ 10 $\frac{2}{4}$ 12 12 $\frac{1}{2}$ 13	26 25 26\frac{1}{4} 19\frac{3}{4} 27 21\frac{1}{2} 22\frac{1}{4} 25\frac{1}{2} 21\frac{1}{2} 27\frac{1}{4} 21	$22\frac{1}{4}$ $25\frac{3}{4}$ $18\frac{1}{2}$ $20\frac{1}{2}$ $20\frac{5}{8}$ 20 19 $25\frac{1}{2}$ $16\frac{3}{4}$	Mongalla Bahr-el-Ghazal Do. S. Sudan Lado Do. Do. S. Sudan Lado Do. Do. Do. Do. Do. Do. Do. Do. Do.		Major P. M. Dove. Major F. G. Poole. Capt. C. Graham. LieutGen. Sir B. T. Mahon. The late G. G. Longden. H. Twyford. Major P. H. G. Powell-Cotton. The late Prince Paul Demidoff. Col. J. J. Harrison. Capt. the Hon. M. P. Macnaghten. Douglas McDouall.
40 ¹ / ₄ 39 36 ¹ / ₄ 36 ¹ / ₄ 35 9 35 33 ² / ₄ 32 ¹ / ₂ 32 31 ¹ / ₄	11 14 $13\frac{1}{2}$ 10 $\frac{2}{3}$ 12 12 $\frac{1}{2}$ 13	$ 26 25 26\frac{1}{4} 19\frac{3}{4} 27 21\frac{1}{2} 22\frac{1}{4} 25\frac{1}{2} 21\frac{1}{2} 27\frac{1}{4} 21 25\frac{1}{4} $	$22\frac{1}{4}$ $25\frac{3}{4}$ $18\frac{1}{2}$ $20\frac{1}{2}$ $20\frac{5}{8}$ 20 19 $25\frac{1}{2}$ $16\frac{3}{4}$ 24	Mongalla Bahr-el-Ghazal Do. S. Sudan Lado Do. Do. S. Sudan Do. Do. Lado Do. Lado Do. Lado		Major P. M. Dove. Major F. G. Poole. Capt. C. Graham. LieutGen. Sir B. T. Mahon. The late G. G. Longden. H. Twyford. Major P. H. G. Powell-Cotton. The late Prince Paul Demidoff. Col. J. J. Harrison. Capt. the Hon. M. P. Macnaghten. Douglas McDouall. C. Mathews.
40\frac{1}{4} 39 36\frac{1}{4} 36\frac{1}{4} 35 \$\frac{2}{3}\$ 32\frac{1}{2} 32 31\frac{1}{4} 31	11 14 13 $\frac{1}{2}$ 10 $\frac{3}{4}$ 12 12 $\frac{1}{2}$ 13 7 13 $\frac{1}{4}$	26 25 26 19 19 27 21 2 2 1 2 2 1 2 2 1 2 7 2 2 7 2 2 7 2 2 7	$22\frac{1}{4}$ $25\frac{3}{4}$ $18\frac{1}{2}$ $20\frac{5}{8}$ 20 19 $25\frac{1}{2}$ $16\frac{3}{4}$ 24 27	Mongalla Bahr-el-Ghazal Do. S. Sudan Lado Do. Do. S. Sudan Near Lado Do. Do. Lado Do.		Major P. M. Dove. Major F. G. Poole. Capt. C. Graham. LieutGen. Sir B. T. Mahon. The late G. G. Longden. H. Twyford. Major P. H. G. Powell-Cotton. The late Prince Paul Demidoff, Col. J. J. Harrison. Capt. the Hon. M. P. Macnaghten. Douglas McDouall. C. Mathews. British Museum (Major P. H. G. Powell-Cotton).
40\frac{1}{4} 39 36\frac{1}{4} 36\frac{1}{4} 35 \$\frac{2}{3}\$ 32 \$\frac{1}{3}\$ 32 \$\frac{1}{3}\$ 31 \$\frac{1}{3}\$ 30\frac{3}{4}\$	11 14 13 $\frac{1}{2}$ 10 $\frac{3}{4}$ 12 12 $\frac{1}{2}$ 13 7 13 $\frac{1}{4}$ 12	26 25 26 19 27 21 22 21 25 21 27 21 27 21 27 21 25 21 25 21	$22\frac{1}{4}$ $25\frac{3}{4}$ $18\frac{1}{2}$ $20\frac{5}{8}$ 20 19 $25\frac{1}{2}$ $16\frac{3}{4}$ 24 27	Mongalla Bahr-el-Ghazal Do. S. Sudan Lado Do. Do. S. Sudan Near Lado Do. Do. Do. White Nile		Major P. M. Dove. Major F. G. Poole. Capt. C. Graham. LieutGen. Sir B. T. Mahon. The late G. G. Longden. H. Twyford. Major P. H. G. Powell-Cotton. The late Prince Paul Demidoff, Col. J. J. Harrison. Capt. the Hon. M. P. Macnaghten. Douglas McDouall. C. Mathews. British Museum (Major P. H. G. Powell-Cotton). LieutCol. C. J. Hawker.
40\frac{1}{4} 39 36\frac{1}{4} 36\frac{1}{4} 35 \$\frac{2}{3}\$ \$\frac{2}{3}\$ \$\frac{1}{4}\$ \$\frac{2}{3}\$ \$\frac{1}{4}\$ \$\frac{1}{3}\$ \$\frac{1}{4}\$ \$\frac{1}{	11 14 $13\frac{1}{2}$ 10 $\frac{3}{4}$ 12 12 $\frac{1}{2}$ 13 7 13 $\frac{1}{4}$ 12 10	26 25 26 19 27 21 22 21 25 21 27 21 25 21 25 21 25 21	$22\frac{1}{4}$ $25\frac{3}{4}$ $18\frac{1}{2}$ $20\frac{5}{8}$ 20 19 $25\frac{1}{2}$ $16\frac{3}{4}$ 24 27 23	Mongalla Bahr-el-Ghazal Do. S. Sudan Lado Do. Do. S. Sudan Near Lado Do. Do. Do. Do. Do. Do. Do. Do.		Major P. M. Dove. Major F. G. Poole. Capt. C. Graham. LieutGen. Sir B. T. Mahon. The late G. G. Longden. H. Twyford. Major P. H. G. Powell-Cotton. The late Prince Paul Demidoff, Col. J. J. Harrison. Capt. the Hon. M. P. Macnaghten. Douglas McDouall. C. Mathews. British Museum (Major P. H. G. Powell-Cotton), LieutCol. C. J. Hawker. Major R. M. Sanders.
40 ¹ / ₄ 39 36 ¹ / ₄ 36 ¹ / ₄ 35 9 35 33 ² / ₄ 32 32 32 31 ¹ / ₄ 31 30 ² / ₄ 29 27 ² / ₄	11 14 $13\frac{1}{2}$ 10 $\frac{3}{4}$ 12 $12\frac{1}{2}$ 13 7 $13\frac{1}{4}$ 12 10	26 25 26 19 27 21 21 25 21 27 21 25 27 25 28 25 28 28	$\begin{array}{c} 22\frac{1}{4}\\ \dots\\ 25\frac{3}{4}\\ \dots\\ 18\frac{1}{2}\\ 20\frac{5}{8}\\ 20\\ 19\\ 25\frac{1}{2}\\ 16\frac{3}{4}\\ 24\\ 27\\ \dots\\ 23\\ \dots\end{array}$	Mongalla Bahr-el-Ghazal Do. S. Sudan Lado Do. Do. S. Sudan Near Lado Do. Do. Do. Do. Do. Do. Do. Sudan Near Lado Do. Do. Lado Do. Lado Do. Sudan No. Lado Do. Lado Do. Sudan No. Lado Do. Co. Co. Co. Co. Co. Co. Co.		Major P. M. Dove. Major F. G. Poole. Capt. C. Graham. LieutGen. Sir B. T. Mahon. The late G. G. Longden. H. Twyford. Major P. H. G. Powell-Cotton. The late Prince Paul Demidoff. Col. J. J. Harrison. Capt. the Hon. M. P. Macnaghten. Douglas McDouall. C. Mathews. British Museum (Major P. H. G. Powell-Cotton). LieutCol. C. J. Hawker. Major R. M. Sanders. Hon. Walter Rothschild.
40 ¹ / ₄ 39 36 ¹ / ₄ 36 ¹ / ₄ 35 9 35 33 ² / ₄ 32 32 32 31 ¹ / ₄ 31 30 ² / ₄ 29 27 ² / ₄ 27	11 14 $13\frac{1}{2}$ 10 $\frac{3}{4}$ 12 $12\frac{1}{2}$ 13 7 $13\frac{1}{4}$ 12 10 9	26 25 26 19 27 21 21 25 21 25 21 25 27 25 21 25 27 25 26 25 28 25 28 25 25 28	$\begin{array}{c} 22\frac{1}{4}\\ \dots\\ 25\frac{3}{4}\\ \dots\\ 18\frac{1}{2}\\ 20\frac{5}{2}\\ 20\\ 19\\ 25\frac{1}{2}\\ 24\\ 27\\ \dots\\ 23\\ \dots\\ 22\frac{1}{2}\\ \end{array}$	Mongalla Bahr-el-Ghazal Do. S. Sudan Lado Do. Do. S. Sudan Near Lado Do. Do. Do. Do. Do. Do. Sudan Near Lado Do. Do. Lado Do. Lado Do. Sudan Do. White Nile Do. S. Sudan Do.		Major P. M. Dove. Major F. G. Poole. Capt. C. Graham. LieutGen. Sir B. T. Mahon. The late G. G. Longden. H. Twyford. Major P. H. G. Powell-Cotton. The late Prince Paul Demidoff. Col. J. J. Harrison. Capt. the Hon. M. P. Macnaghten. Douglas McDouall. C. Mathews. British Museum (Major P. H. G. Powell-Cotton). LieutCol. C. J. Hawker. Major R. M. Sanders. Hon. Walter Rothschild. A. A. R. Boyce.
40 ¹ / ₄ 39 36 ¹ / ₄ 36 ¹ / ₄ 35 9 35 33 ² / ₄ 32 32 32 31 ¹ / ₄ 31 30 ² / ₄ 29 27 ² / ₄ 27	11 14 $13\frac{1}{2}$ 10 $\frac{3}{4}$ 12 $12\frac{1}{2}$ 13 7 $13\frac{1}{4}$ 12 10 9	26 25 26 19 27 21 21 25 21 25 21 25 27 25 21 25 27 25 26 25 28 25 28 25 28 25 28 25 28	$\begin{array}{c} 22\frac{1}{4}\\ \dots\\ 25\frac{3}{4}\\ \dots\\ 18\frac{1}{2}\\ 20\frac{5}{8}\\ 20\\ 19\\ 25\frac{1}{2}\\ 24\\ 27\\ \dots\\ 23\\ \dots\\ 22\frac{1}{2}\\ 21\frac{1}{4}\\ \end{array}$	Mongalla Bahr-el-Ghazal Do. S. Sudan Lado Do. Do. S. Sudan Near Lado Do. Do. Do. Do. Sudan Near Lado Do. Do. Lado Do. Lado Do. Sudan Do. Co. Co. Co. Co. Co. Co. Co.		Major P. M. Dove. Major F. G. Poole. Capt. C. Graham. LieutGen. Sir B. T. Mahon. The late G. G. Longden. H. Twyford. Major P. H. G. Powell-Cotton. The late Prince Paul Demidoff. Col. J. J. Harrison. Capt. the Hon. M. P. Macnaghten. Douglas McDouall. C. Mathews. British Museum (Major P. H. G. Powell-Cotton). LieutCol. C. J. Hawker. Major R. M. Sanders. Hon. Walter Rothschild. A. A. R. Boyce. Capt. F. W. Woodward.
40 ¹ / ₄ 39 36 ¹ / ₄ 36 ¹ / ₄ 35 9 35 33 ² / ₄ 32 32 32 31 ¹ / ₄ 31 30 ² / ₄ 29 27 ² / ₄ 27	11 14 $13\frac{1}{2}$ 10 $\frac{3}{4}$ 12 $12\frac{1}{2}$ 13 7 $13\frac{1}{4}$ 12 10 9	26 25 26 19 27 21 21 25 21 25 21 25 27 25 21 25 27 25 26 25 28 25 28 25 25 28	$\begin{array}{c} 22\frac{1}{4}\\ \dots\\ 25\frac{3}{4}\\ \dots\\ 18\frac{1}{2}\\ 20\frac{5}{2}\\ 20\\ 19\\ 25\frac{1}{2}\\ 24\\ 27\\ \dots\\ 23\\ \dots\\ 22\frac{1}{2}\\ \end{array}$	Mongalla Bahr-el-Ghazal Do. S. Sudan Lado Do. Do. S. Sudan Near Lado Do. Do. Do. Do. Do. Do. Sudan Near Lado Do. Do. Lado Do. Lado Do. Sudan Do. White Nile Do. S. Sudan Do.		Major P. M. Dove. Major F. G. Poole. Capt. C. Graham. LieutGen. Sir B. T. Mahon. The late G. G. Longden. H. Twyford. Major P. H. G. Powell-Cotton. The late Prince Paul Demidoff. Col. J. J. Harrison. Capt. the Hon. M. P. Macnaghten. Douglas McDouall. C. Mathews. British Museum (Major P. H. G. Powell-Cotton). LieutCol. C. J. Hawker. Major R. M. Sanders. Hon. Walter Rothschild. A. A. R. Boyce.



Under Surface of Skull of Indian Elephant.

The ASIATIC or INDIAN ELEPHANT (Elephas maximus).

In general a decidedly smaller animal, the Indian elephant differs from its African relative not only in external form, but also in the structure of its molar teeth, which are composed of a greater number of much thinner vertical plates. The females, as a rule, have only very small tusks, not projecting beyond the jaw; and in some cases those of the males are equally poorly developed. Five nails are usually present on the fore-feet, and four on the hind pair. Externally, the most characteristic distinction is the comparatively small size of the ears; next to which comes the presence of a finger-like process on the front edge only of the tip of the trunk; the African species having one in front and a second behind. The skin is nearly smooth; and the

bristles on the tail are confined to the front and back edges for some distance above the tip. Other noticeable points are the comparative flatness of the forehead, and the regular convex form of the back, as well as the perfect flexibility of the trunk, which may be compared in structure to an india-rubber tube. In the African elephant the trunk may be compared to a telescope consisting of segments of different calibre. Although males do not generally exceed 9, and females 8 feet in height, specimens have been killed measuring over 10 feet, while one is stated to have reached 11 feet, and a skeleton in the Indian Museum, Calcutta, indicates a still larger individual.

Distribution.—The forest-districts of India, Ceylon, Assam, Burma, Malay Peninsula, Siam, Cochin China, Sumatra, and Borneo. There is some doubt as to which is the typical form of the species. It has been considered that the Ceylon elephant holds this position, but the specimens originally named were probably tuskers introduced from the mainland. The Indian race may therefore be taken as the type. In the Ceylon race (E. maximus zeylanicus) the males have very small tusks, and the females are tuskless. The Sumatran race (E. m. sumatrensis) is characterised by the coarser structure of the molar teeth, and the Malay E. m. hirsutus by the shape of the ear.

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δ Indian elephant, living, 6800 lbs. (New York Zool. Soc.). ♀ ,, ,, ,, 4500 ,, ,, ,,
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Height (Owner's Measurements).

At sho			Lo	cality.			Owner.
10	6	Burma					H. Shaw Dunn.
10	5	Coorg		٠.			Capt. S. H. Charrington.
10	4	Burma					A. E. S. Minett.
IO	4	Garhwal,	Unite	d Pro	vince	es.	Col. J. E. Campbell.
10	I	Ceylon					 Col. J. J. Harrison.
10	I	India					Major-General A. A. A. Kinloch.
9	8	Southern	India				F. Gompertz.

Tusks.

Length out- side curve.	Greatest circumference.	Weight.	Locality.	Owner.
ft. ins.	ins.	lbs.		
$-9 10\frac{1}{2}$	15½	∫	?	Royal Siamese Museum, Bangkok,
-9 o	153	}	•	Troyar Dameso Francis, Dangson,

⁻ Owner's measurements.

Length out-	Greatest cir- cumference.	Weight.	Locality.	Owner.
ft. ins.	ins.	lbs.		
–8 9 R	17‡	81		m
-8 2 L	•••	80.5	Assam	The late Earl of Lytton.
-8 9)	***		Burma	Government House, Rangoon.
-8 6)	•••			·
8 o	16 7	90	S. India	Sir Victor Brooke's Collection.
¹ 7 9	17		Burma	Royal Palace, Mandalay.
-7 6	15½		Sumatra	G. F. W. Curtis.
-7 0	141 }	***	Sumatra	G. E. W. Cuttis
-7 $4\frac{1}{4}$	184	85	Assam	T. H. Monteath.
² 7 3 ³	171/2	102	Burma	Marquis of Waterford.
7 31	$17\frac{1}{8}$	$97\frac{1}{2}$		Transparence of Transparence
6 11	$15\frac{1}{2}$	106	Do	R. Gordon Smith.
6 6	$15\frac{1}{2}$	100		
6 10	17½	65 §	India	Bethnal Green Museum (J. D. Goldingham).
-6 8	183	84	Burma	H. Shaw Dunn.
-6 5	183	83)		,
6 7½	148	$52\frac{1}{2}$	Mysore	Viscount Powerscourt.
-6 7	$I2\frac{1}{2}$	$46\frac{1}{2}$	Yala, S. Provinces,	LieutCol. R. J. Marker.
3 113	121	294	Ceylon	
-6 6	•••	$73\frac{1}{2}$	Burma	A. E. S. Minett.
-6 4		7112		
-6 4	•••	•••	Assam	G. H. Moore.
$-6 3\frac{1}{2}$		734	Madura District .	British Museum.
6 2	16 ¹ ₈	58	North Coimbatore.	Rev. H. C. B. Stone.
5 111	165	56½)		
-6 I	174	56½	Assam	Noel Williamson.
-5 II ² / ₄	172	53½ J		
6 і	16½	48½	Burma	E. M. Alexander.
5 10	16‡	42)		

⁻ Owner's measurements.

1 Exposed from gum.

2 The tusks of the sacred white elephant from King Thebaw's Palace, Mandalay.

		Greatest cir- cumference.	Weight.	Locality.	0,	wner.
ft.	ins.	ins.	lbs.			
6 5			109	S. India	. F. Gompertz.	
6	0		50	Madras	. J. Fortune.	
5	11	16	45	Bengal	. H. K. Robinson	
5	10	16	$46\frac{1}{2}$.•
-5	10			Borneo	. C. M. D. Stewar	t.
-5	3	15	42	Ceylon	. W. S. Murray.	
4	$10\frac{3}{4}$	$13\frac{1}{2}$	28	Malawa	. J. Scott Mason.	
4	$7\frac{1}{2}$	13½	27 ∫	intalaya	. J. Scott Mason.	

- Owner's measurements.

Feet (after preservation).

Circumference at base.	Width at bottom, back to front.	Locality.			Owner.		
$ \begin{array}{c} 63\frac{1}{2} \\ 62\frac{1}{2} \end{array} $		Pegu, Burn	ma		Capt. W. F. Brayne.		
$62\frac{1}{2}$	٠	South Arc	ot Dis	strict	J. Fortune.		
61	20	Travancore	2		Col. D. M. Lumsden.		
60	18	Mysore			Viscount Powerscourt.		
59	19		3		Lieut. R. Home, R.N.		
$58\frac{1}{2}$	18	Travancore	9		Capt. H. L. Cottingham.		
$58\frac{1}{2}$	18	Assam			A. H. Cuming.		
58	19	Do.			Major F. B. Stapleton-Bretherton.		
58	18	Travancor	е		Hon. E. Stonor.		
$57\frac{3}{4}$	19	Assam	٠		H. C. Holland.		
57 3	18		?		L. V. Bagshawe.		
$57\frac{1}{2}$	$18\frac{1}{2}$	Assam			D. D. F. Hosack.		
56	17	Do.			G. M. Norrie.		
56	171		?		Capt. G. P. Evans.		
¹ 55	17	Garhwal			B. B. Osmaston.		
² 55	20 ³ / ₄		?		Lieut. R. Home, R.N.		

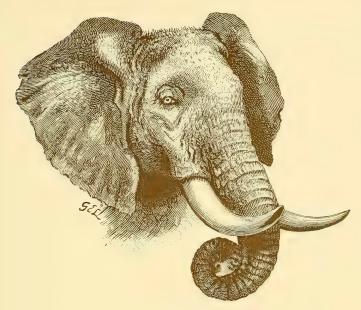
¹ Measured, 59½ when shot.

² Hind foot.

OWNER'S MEASUREMENTS.

Circumference at base.	Width at bottom, back to front.	Locali	ty.		Owner.
671	• • •		5		From living elephant, by Major-Gen. G. W. Hanson.
$63\frac{1}{2}$		N. Burma			H. Shaw Dunn.
$61\frac{1}{2}$	• • •	Coorg			Capt. S. H. Charrington.
601/2			?		Major-Gen. A. A. A. Kinloch.
1 57 $^{\frac{1}{2}}$	17	Ceylon			R. Gordon Smith.
$57\frac{1}{2}$		S. India			Col. E. T. Taylor.
56	•••	Ceylon			E. J. Brooke.
56	18	Do.			Sir Peter Walker, Bart.

¹ Measurements, 54 ins. × 17 ins. when dried.



Head of African Elephant.

The AFRICAN ELEPHANT (Elephas [Loxodon] africanus).

Arb. Galla. Dakana, Danakil.

 $F\bar{\nu}l$, Sudani. Giwa, Hausa.

Marodi, Somali. Muzovu, Chila.

Njovu, Chilala and Chibisa.

Njovu, Waganda. Temba, Swahili. Tepo, M'Kua.

Thlo, Ngami. Tlo, Barotsi.

Zahon, Abyssinian.

Some of the distinctive features of the African elephant are indicated under the heading of the Indian species.

The African elephant, although still abundant in many regions of Central Africa, in the southern part of the continent is rapidly approaching extinction. A remarkable exception to this process of extermination is, however, to be found in the south and east of Cape Colony, where, since the year 1830, wild elephants have been systematically preserved by Government. Strong troops of these protected elephants still roam the dense and impenetrable jungles of the Addo Bush and the Knysna and Zitzikamma forests. Farther inland the ivory-hunters have for a generation past been so actively employed that, despite the vast numbers of these great mammals which forty or fifty years ago thronged the interior from the Orange

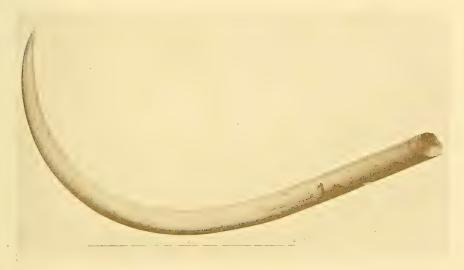
River northwards, but few herds are now left south of the Zambesi. The species has been divided into a number of local races, mainly distinguished by the form and size of the ears and tusks.

BODILY SIZE.—OWNER'S MEASUREMENTS.

Heigh shoul in stra lin	lder aight	Total length (trunk to end of tail).	Girth of fore-foot.	Localit	iy.		Owner,
ft.	ins.	ft. ins.	ft. ins.				
II	$8\frac{1}{2}$			Abyssinia .			H. Weld-Blundell.
¹ II	$6\frac{1}{2}$	15 5	5 5\frac{1}{4}	Near Wadelai			Major P. H. G. Powell-Cotton.
II	6		4 10	Do.	٠		E. S. Grogan and Major G. A. S. Cape.
II	4			Kavirondo Hi	lls		E. B. Bronson.
ΙI	4			Sudan .			Earl of Sefton.
ΙΙ	3			East Africa			The late A. H. Neumann.
II	3			Do.			H. B. Tate.
ΙI	$2\frac{1}{2}$			Blue Nile .			Capt. J. A. Pollock.
II	I	17 3	4 11	Mozambique			Col. J. J. Harrison.
ΙI	1	:	5 4	Toro, E.C.A.			E. S. Grogan.
ΙΙ	I			East Africa			Abel Chapman.
ΙΙ	0			Do.	٠		G. F. Archer.
ΙΙ	0			Uganda .			G. M. Norrie.
10	$10\frac{1}{2}$			Sudan .			G. C. Whitaker.
10	$10\frac{1}{2}$			Sierra Leone			Capt. W. P. Pearse.
10	10			N.W. Rhodesi	a		Dr. A. H. B. Kirkwood.
IO	10			White Nile			Major R. M. Sanders.
10	9	² 12 8	5 0	Lake Rudolf			The late A. H. Neumann.
IO	8	***		Uganda .			M. Mitchell.
10	8	***	4 10	Tana Valley			Major H. De Prée.
10	7 '	'Jumbo"			3		Barnum and Bailey.
10	6	***	4 8	Tana Valley			Capt. C. Hankey.
10	6			S.E. Africa			F. C. Selous.
10	4			N.E. Rhodesia			R. D. Waterhouse.
10	3	21 0	5 І	Nyasaland			Sir John Kirk.
9	71		4 63 (dried)	Somaliland			Viscount Edmond de Poncins.

¹ Length of humerus, 3 ft. 8 ins. 2 Length from root of tail to eye, in straight line.

With reference to the height of elephants, the late Mr. A. H. Neumann, in *Elephant Hunting in East Equatorial Africa*, stated that "I am an unbeliever in 14 ft. elephants or anything like it. Possibly (though I doubt even that) there may be a 12 ft. one in existence, but I have had some experience (and probably more opportunities of judging than most of those who pose as authorities), and I have never killed one that could be absolutely guaranteed to be over 11 ft. 3 ins. in height (to be quite on the safe side, for as a fact I made it an inch more). I have killed two of that height in my time, and not another within several inches of this."



African Elephant Tusk in the American National Collection.

Tusks.

Le (outsid	ngth (e curve). circ	Greatest umference.	Weight.	Locality.		Owner.	
ft.	ins.	ins.	lbs.				
ΙΙ	5½	181	293	East Africa		American National Collection.	
II	0	$18\frac{1}{2}$,,,			(See illustration.)	
IO	4	183	126	Mongalla		H.R.H. the Duc de Montpensier.	
9	7	19	$123\frac{1}{2}$	1.301.8	•	Titti the Due de Montpensier	
10	2 ½	24 ¹ / ₄	2261	East Africa		British Museum.	
10	2		159	Marsabit		F. J. Watson Taylor.	
9	10	194	247	Do.		Charles Pulley.	
9	5	19	~4/	20.		Charles I uncy.	

Lengtl	Greatest	Weight.	Locality.	Owner.
ft. ins. 9 5		lbs.	Tana Valley	Major H. De Prée.
9 0	18½ 22½	117)	3	Sir Edmund G. Loder, Bart.
9 4	201	160	East Africa	Sir John Kirk.
9 4	18	110	Do	Duke of Westminster.
(tip brok	en)	151	Elgayu, E. Africa .	Sir F. J. Jackson.
9 4	22	1561	Uganda	R. Grauer.
9 1	$22\frac{3}{4}$	168½)		
9 31	183	•••	Tana Valley	Sir Robert Harvey, Bart.
-9 3	•••	129	East Africa	Sir F. J. Jackson.
9 2 4	20		Tana Valley	Sir Robert Harvey, Bart.
9 2 8 5	24 \ 24 \	340	Uganda	Capt. H. S. Burrough.
9 1½ 8 9½		176 179 ³	Do	Capt. E. B. Place.
9 I	$19\frac{1}{2}$	114	East Africa	Col. A. Eric Smith.
19 o	$21\frac{3}{8}$ $22\frac{1}{2}$	161) 167 ∫	Tana Valley	His Majesty The King.
² 9 0 8 6	$2I_{\frac{1}{2}}^{\frac{1}{2}}$	139	Uganda	Frankfort Museum. Shot by the late G. G. Longden.
9 0	25 23½	198) 174)	Central Africa .	Major P. H. G. Powell-Cotton.
9 o 8 10	2 I 2 I	130	East Africa	J. Elkington.
8 11	20	130		
8 8	193	$124\frac{1}{2}$	Do	N. C. Cockburn.
-8 11	18 <u>1</u>	110)		
-8 9	18½	108	Mt. Elgon, E. Africa	LieutCol. J. D. Ferguson.
8 10	18	105	East Africa	Lord Delamere.
-8 9	•••	102	Tana Valley	Major H. De Prée and Capt. C.
-8 0	• • •	91)	Ouner's measurement	Hankey.

⁻ Owner's measurements. Khan. ² Presented by Rudolf de Goldschmidt. ¹ Presented by H.H. the Aga Khan.

	ngth Circi	Greatest umference.	Weight.	Locality.			Owner.
	ins.	ins.	lbs.				
8	$9\frac{1}{2}$	17	90}	East Africa			Sutton Timmis.
	I I ½	17½	92)				
8	9	192	104	Do.			G. M. Norrie.
8	$3\frac{1}{2}$	$19\frac{1}{2}$	100)				
8	$7\frac{1}{2}$	$22\frac{3}{4}$	165	Do.		.	His Majesty The King.
8	6	171	$78\frac{1}{2}$	Congo .			Duke of Peneranda.
8	6	17	$78\frac{1}{2}$	3			
8	$5\frac{1}{2}$	$17\frac{1}{2}$	$80\frac{1}{2}$	Do .			Sir A. Sharpe.
8	0	17½	79	20 .	•	•	· ·
8	5	233	175	Uganda .			Graham Pownall.
8	5	193	$139\frac{1}{2}$	Bahr-el-Gebel	,		Major R. M. Sanders.
8	13	$19\frac{3}{4}$	137 ∫	Dailt-et-Gebe		•	major K. M. Sanders.
8	$4\frac{1}{2}$	19‡	$99\frac{1}{2}$	C1			Cont. E. C. Hamilton
7	6	19	$96\frac{1}{2}$	Sudan .	•	•	Capt. E. C. Hamilton.
8	$4\frac{1}{2}$	18	$97\frac{1}{2}$	DE W.			C . W II W''''
7	0	$18\frac{1}{2}$	91	B.E. Africa	•	•	Capt. W. H. Wilkin.
8	. 4	172	881	East Africa			W. Neilson.
8	4	•••	76	M'bogo			E. S. Grogan.
8	4	$2I\frac{1}{2}$	150)	Near Wadela	:		W V Wandham
8	3	21	147	ivear wadera	1.		W. Y. Wyndham.
8	3	183	$81\frac{1}{2}$	East Africa			Capt. T. W. Greenfield.
8	2	183	8o J	Last Tillea	•	'	Capt. 1. W. Greenheid.
8	3	22	$135\frac{1}{2}$	Sudan .			Sir W. Garstin.
7	II	231/4	$159\frac{1}{2}$	•		•	
8	2	20 ³ / ₄	145	Gondokoro			His Majesty The King.
7	$8\frac{1}{2}$	$20\frac{1}{2}$	121	00114011010	·	•	in the standard and stange
8	I	$17\frac{3}{4}$	86	5			Major G. G. P. Humphreys.
8	I	16)	•••	East Africa			Capt. C. J. Murray.
7	2	16)	•••			·	Por Or J. Manny.
8	I	201	110	Abyssinian S	udan		W. N. McMillan.
8	0	20	108)	,			
8	0	20	118 }	Uganda .			Capt. C. H. Stigand.
7	81/2	192	1061	<u> </u>			

Lengt	h Greatest urve). circumference.	Weight.	L	ocality	7•	Owner,
ft. ins		lbs. 98)				
7 8.		138	Sierra I	eone		Major C. E. Palmer.
7 11	175	90)				
7 0	17	80∫	White N	lile	•	Capt. E. R. Wishaw.
7 10	20	113	Upper N	Vile		Douglas McDouall.
7 5	201	108)	- 1			5
7 10	172	85	East Afr	ica		C. Bower Ismay.
7 6	17	SI)				
7 10	16½	63	Do.			R. Holmes.
7 S	16½	681				
7 9	17½	95½	Do.			P. Niedieck.
-7 9	22	119	N.E. Rh	odesi	а	F. H. Melland.
-7 84	$20\frac{1}{2}$	110				
7 9	$22\frac{1}{2}$	268	Lake Ru	dolf		A. E. Butter.
7 7	2112					
7 7	163		Lake Na	ivash	а	T. W. Brooke.
7 6	16 <u>3</u> }					
7 6	. 19 ¹ / ₈	101	S. Abyss	inia		J. R. Luchsinger.
6 93	19	91)	2. 22.			J. 21. 22.11.11.11.19
7 6½	17½	781	Congo			R. de la Huerta.
7 2	•••	75章)	0 8 -			
7 6	20	103	East Afri	ica		Col. Max C. Fleischmann.
6 9	193	93)				
7 6	171	76)	Uganda			H. Leney.
6 11 <u>1</u>	18	81)	o ga		•	227 22013)7
7 5½	18	85)	Sudan			Major A. W. Jennings Bramly.
7 5	184	80)				inger in the Jeminge Diamiye
7 5	19‡	84	Do.			Major H. D. Pearson.
7 5	$22\frac{1}{2}$	114)	Lado			Capt. R. S. Hart.
7 2	23	112		·		and the same of th
7 42	20	921/2	Uganda			J. Jay White.
7 42	19½	911/2	5			J. JJ. (1 and 1)

⁻ Owner's measurements.

1 In Hon. Walter Rothschild's Museum at Tring.

	ength de curve).	Greatest circumference.	Weight.	Locality.			Owner.
	ins.	ins.	lbs.				
7	21/2	184	87	Abyssinian S	udan		C. Bulpett.
6	7	184	85)	-			
7	2	$19\frac{1}{2}$	88 }	Uganda .			C. Bulpett. G. M. Norrie.
6	IO	19	77 J				
7	2	17½	811/2	Sudan .			Countess of Sefton.
6	$7\frac{1}{2}$	17½	803)				
7	0	21 ³ / ₄	93	Uganda .			G. Blaine.
7	0	2 I ½	91)	_			
6	IO^1_2	17½	65	N. Nigeria			G. Blaine. Capt. G. C. Kelly. G. M. Norrie.
6	0	$17\frac{1}{2}$	591				
6	10	22	112	Uganda .			G. M. Norrie.
6	4	22	103	3			
6	7	164	•••				F. C. Selous.
6	7	174	73	N.E. Dhada			Hon M W Flahinstone
6	O_2^1	171					Hon, M. W. Elphinstone.
6	6	$18\frac{1}{2}$	57	S.E. Africa			P. Neergaard.
	$4\frac{1}{2}$	18_{2}^{1}	$63\frac{1}{2}$	J.L. Hilla	٠	٠	1. Incorganite.
	6)	151		B.C. Africa			R. H. Storey.
6	4)						
96	$5\frac{1}{2}$	$12\frac{1}{2}$	•••	N. of Lake	Rudol	f.	The late A. H. Neumann.
6	$2\frac{1}{2}$	181		Lomagundi's	Cour	ntry	Duke of Westminster.
_ 5	$7\frac{1}{2}$	185 ∫		3			
- ♀ 5	I I ½	•••	40	Uganda .			Capt. E. B. Place.
-♀5	$10\frac{7}{3}$		39	3			Capt. E. B. Place.
5	0	$14\frac{3}{4}$	49	Abyssinia			A. E. Butter.
4	8	144					
4	II	15	26	Somaliland		•	A. H. Straker.
4	$9\frac{1}{2}$	143	$33\frac{1}{2}$	Do.			Major E. W. S. Brooke.
4	8‡	13½		Do.			Sir Edmund G. Loder, Bart.
4	5	${\rm I}2\frac{1}{2}$	•••	Do.	ı		Lord Delamere.
4	4	134	26	Do.			LieutCol. J. McCall Maxwell.

The following specimens probably belong to the Dwarf Congo race (E. africanus pumilio):—

Length (outside curve).	Greatest circumference.	Weight.	Locality.	Owner.
ft. ins.	ins.	lbs.		
5 6	134	$27\frac{1}{2}$	Semliki	. G. Blaine.
5 4	134	$27\frac{1}{2}$		
3 8	12	17		
$3 7\frac{1}{2}$	121	17 73	- Umfumbro, E. Congo	. Major J. Webb Bowen.
92 II	81	73	e miumbro, E. congo	. Major j. Webb bowen.
9 2 II	$8\frac{1}{2}$	8		

Feet (after preservation).

Circumference at base.	Width at bottom, back to front.	Locality.		Owner.
$66\frac{1}{2}$	22	East Africa		G. F. Archer.
654	$20\frac{1}{2}$	Near Albert Ny	anza	H. S. Keating.
651	***	Near Wadelai		Major P. H. G. Powell-Cotton.
-65		Central Africa		Arnold Mathews.
64		Uganda .		G. M. Norrie.
64	$20\frac{1}{2}$	Toro		E. S. Grogan.
$63\frac{1}{2}$	20	White Nile		Sir W. Garstin.
$63\frac{1}{2}$	$21\frac{1}{2}$	Uganda .		The late G. G. Longden.
63	20	White Nile		Major C. J. Hawker.
-63		Blue Nile .		Capt. J. A. Pollock.
$62\frac{1}{2}$	21	Sudan .		Earl of Sefton.
621/2	***	Do		M. C. Radford.
62	20	East Africa		C. Craig.
61	• • •	N. Nigeria		Capt. G. C. Kelly.
-61		East Africa		Marquis Pizzardi,
-60 3		Somaliland		Capt. M. S. Wellby.
60 <u>1</u>		White Nile		Sir Edmund G. Loder, Bart.
60½	20	Sudan .		G. C. Whitaker.
60	19	Wadelai .	•	LieutCol. M. L. Carleton.

⁻ Owner's measurements.

MAMMOTH or EXTINCT SIBERIAN ELEPHANT (Elephas primigenius).

Nearly allied to the Indian elephant, but the plates of the teeth still narrower and more numerous, the tusks spirally twisted, the ears smaller, and the skin clothed in woolly fur with long bristles intermixed. The height is generally inferior to that of the Indian species.

Remains of this species occur in the superficial deposits of Europe and Northern Asia. In the frozen soil of Siberia the skin, flesh, and hair are frequently preserved, and the ivory is often suitable for the purposes of the turner.

	th (out- curve).	Greatest circum- ference.	Weight.		Locality.		Owner.
ft.	ins.	ins.	lbs.				
12	$10\frac{1}{2}$	$31\frac{1}{2}$	•••		3		Stuttgart Museum.
12	8		***	Siberia			Hon. Walter Rothschild.
12	6	23			?		British Museum.
12	O	19	•••		3		Hon. Walter Rothschild.
11	9	35	330 (astimated)		;		Milan Museum.
11	5	$17\frac{3}{4}$	(estimated) 		3		Hon. Walter Rothschild.
II	0	20 7	173	Siberia			Sir Edmund G. Loder, Bart.



Modelled in the Rowland Ward Studios.

African Lion (fore part).

The LION (Felis leo).

Ambassa, Abyssinian.
Asad, Arabic.
Imbubi, Ibubesi, Inyonyama,
Matonga, and Marhanganga,
Swazi and Zulu.
Karamo, M'Kua.
Lendjandnēk, Galla.
Libba, Somali.

Leeuw, Cape Dutch.
Libbaka, Danakil.
Nkango or Nkalamo, Chilala and
Chibisa.
Shumba, Chila.
Simba, Swahili.
Tau, Basuto and Bechuana.
Tauw, Barotsi and Ngami.

Zaki, Hausa.

Any description of such a familiar animal as the lion (the only cat in which the male is furnished with a mane on the head and shoulders, and a tuft of long hair to the tip of the tail) would obviously be superfluous here. One of the points of interest attaching to the species is its wide distribution. Several local races are now recognised. Somali lions are smaller and greyer than those from either the Cape or Algeria, although their manes are often very fine, and the East African

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(F. l. masaicus) is distinguished by the persistence in the adult, especially the female, of the chocolate spots of the cubs. The Indian lion (F. leo gujratensis), distinguished by its small, straight, and tawny mane and pale tawny colour, is another race. Heights of 3 feet $3\frac{1}{2}$ and 3 feet 8 inches at the shoulder have been recorded in African specimens (the larger measurement by Mr. Selous), and 3 feet 6 inches in an Indian example (by Gen. W. Rice). Mr. Selous killed an African lion weighing 500 lbs.; and between 400 and 500 lbs. may be taken as the average weight. Wild lions seldom develop such enormous manes as menagerie examples.

A lion's skull may be easily recognised when placed beside that of a tiger by the fact that in the former the terminations of the sutures dividing the frontal from the nasal and maxillary (jaw) bones are situated nearly in the same transverse line, while in the latter the nasal bones extend much farther back than the maxillary. Moreover, the lower jaw of a lion will stand much flatter on a table than that of a tiger.

Distribution.—In modern times Africa from Algeria to the Cape, Mesopotamia on the west flanks of the Zagros range, Persia south of Shiraz, and India in the districts of Kathiawar, Sind, the Central Provinces, and Bundelcund. Now rare in India, where it is confined to the Gir Forest in Kathiawar.

OWNER'S MEASUREMENTS.

len bef	tal gth ore ning.	Length from nose to root of tail.	Skin measure- ment from tip of nose to tip of tail.	Estimated height at shoulder.	Mane.	Locality.	Owner.
ft.	ins.	ft. ins.	ft. ins.	ft. ins.			
10	5 (A)	•••	10 $10\frac{1}{2}$ (raw)	3 7	Black	S.E. Africa .	F. Vaughan Kirby.
10	5	•••	•••		Fine	East Africa .	Dr. W. S. Rainsford.
10	4	7 6	(dressed)		Fair	Gir Forest, India	Lord Lamington.
10	4	•••	II 2	•••	Good	East Africa .	Capt. the Hon. G. H. Douglas-Pennant.
10	$2\frac{1}{2}$	•••	•••	***	Fair	N.E. Rhodesia.	R. D. Waterhouse.
10	2	•••	10 $2\frac{1}{2}$	• • •	Do.	N.W. Rhodesia	Major R. Gordon.
10	2	7 3	•••	3 6	Do.	Blue Nile	Capt. C. C. Maud.
10	I				Fine	East Africa .	Capt. E. Sartorius.

OWNER'S MEASUREMENTS—continued.

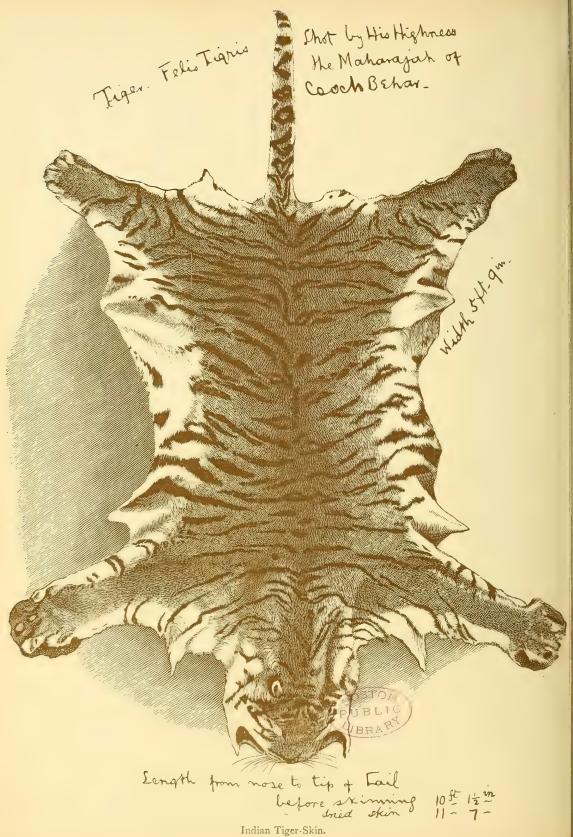
Owner.		W. Yellowby.	C. C. Branch.	Count R. Coudenhove-Kalergi.	S. E. White.	F. C. Selous.	Norman B. Smith.	The late Rear-Admiral R. A. J.	Montgomerie, K.IN. Major A. St. H. Gibbons.	Capt. M. Kincaid Smith.	J. Bracken.	A. E. Leatham.	R. G. Beswick.	Major H. B. Dalgety.	LieutCol. J. H. Patterson.	Sutton Timmis.	Capt. M. McNeill.	Lord Harris.	S. Robins.	Sutton Timmis.	LieutCol. L. L. Fenton.	Capt, C. G. Leslie.	Capt. R. Meinertzhagen.	H.R.H. the Duke of Connaught.	
Locality.		Edmund's Menagerie	East Africa .	Somaliland .	East Africa .	Hartley Hills,	Mashonaland East Africa	Do	Mushukulumbwe	East Africa .	N.W. Rhodesia	Somaliland .	Zomba	East Africa .	Do	Do	P.E. Africa .	Kathiawar .	B.C. Africa .	East Africa .	Kathiawar .	N.W. Rhodesia	East Africa .	Do	
Mane.		Fine	Fair	:	:	Fine	Do	Do	Full black .	Good	:	Yellow and black	Full yellow .	Fine black .	None	Fair	Fine	Do	:	:	:	:	:	:	
Weight.	lbs.	434	:	:	:	410	:	516	:	:	:	:	:	:	:	:	:	:	:	:	:	:	260	:	
Girth behind shoulder.	ins.	57	:	52 4	:	:	:	512	498	:	;	:	:	52	:	:	45	:	49	:	:	44	:	:	
Girth of forearm.	ins.	22	(mme anddn)	:	:	:	161	193	:	:	61	÷	154	61	:	17	213	:	19	;	:	171	:	:	
Estimated height at shoulder.	ft. ins.	3 6	3 74	- 1	3 9	. &	7	3 6	3 7	:	0 4	:	3 41	:	3 9	:	÷	:	:	:	÷	3 72	$2 10\frac{1}{2}$:	
Skin measure- ment from tip of nose to tip of tail.	ft. ins.	:	6 11		:	6 11	(raw) 11	10 8	(dressed)	(raw) IO 5	· :	11 6	:	:	:	12 0	:	÷	:	i	:	10 I ¹ / ₈	:	10.2	(dressed)
Length from nose to root of tail.	ft. ins.	01 9	0 4	7 5.3	:	:	:	8 9	:	:	:	:	6 64	:	:	:	:	:	10 5	· :	9 9	:	:	:	
Total length	ft. ins.		0 01		9 III	9 II (C)	II 6	9 IO ¹ ₂ (D)	(H) 01 6	0 10 (T)	0 10		8 6	, o	8 6	8 6	0 7	. 6	9 6	9 6 8	1 00 00		\$ 8 I.A		

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Skulls.

Length from back to front.1	Width across the zygomatic arches.	Weight cleaned.	Locality.	Owner.
$16\frac{1}{2}$ (A)	10		South-East Africa	F. Vaughan Kirby.
16	$10\frac{1}{4}$	5 lbs.	East Africa	E. Gedge.
(end broken)	10	6 lbs. 8 oz.	Do	Hon. C. G. Murray.
15½ (D)	$10\frac{1}{2}$	5 lbs. 3 oz.	Do	The late Rear-Admiral R. A. J. Montgomerie, R. N.
15½	$9\frac{1}{4}$	•••	Pungwe	Hon. T. Thynne.
$15\frac{1}{2}$	$9\frac{1}{4}$		S. Rhodesia .	C. W. Adams.
15 ³ 6	91		E. Africa	H. H. Williams.
15	10	•••	Mashonaland .	Basil H. Woodd.
15	$9\frac{1}{2}$		Somaliland	H.R.H. the Duc d'Orléans.
15	10		Do	Gen. Sir Arthur Paget.
15 (C)	10	5 lbs. 8 oz.	South-East Africa	F. C. Selous.
15	$10\frac{1}{8}$	5 lbs. 6 oz.	East Africa	Capt. A. E. F. Fawcus.
148	9		Do	G. L. Harrison.
14 ⁷ 8	91	5 lbs. 8 oz.	Do	Sir Thos. R. Dewar.
14 7 8	$9^{\frac{7}{16}}$	5 lbs.	N.W. Rhodesia .	J. H. Venning.
143	9 5		Do	J. Bracken.
143	9		South-East Africa	H. M. von Archer.
143	9		Matabililand .	Capt. Sir K. Fraser, Bart.
1411	$10\frac{1}{16}$	5 lbs.	East Africa	C. C. Branch.
14 ¹¹ / ₁₆ (L)	9 ₁₆	5 lbs. 3 oz.	Do	Capt. M. Kincaid-Smith.
144	$9\frac{7}{8}$	4 lbs. 8 oz.	S.E. Africa .	E. P. Frost.
145			Nigeria	N. J. Dodd.
1476	$10^{1.3}_{1.6}$	4 lbs. 12 oz.	East Africa	Major P. H. G. Powell-Cotton.
141/2	9\frac{3}{4}	4 lbs.	South Africa .	Sir Edmund G. Loder, Bart.
141/2	$9^{\frac{1}{2}}$		Do	Sir Abe Bailey.
141/2	10		East Africa	Norman B. Smith.
14½	10	5 lbs.	Do	H.R.H. the Duke of Connaught.
148	98		Rhodesia	W. Robinson.
141	91	4 lb. 14 oz.	East Africa	Hon. W. Guinness.
♀ 14½	83		South-East Africa	F. Vaughan Kirby.
	-			,
		OWNER'S	MEASUREMENT	S.
17	I I 1 6		Delagoa Bay .	Berlin Museum.
16	$10\frac{1}{2}$?	P. C. Keytel.
158	94	6 lbs.	South Africa .	J. Lamont.
15½ (H)	9 ³ / ₄	•••	Mushukulumbwe.	Major A. St. H. Gibbons.
14½ (K)	9‡	V	Somaliland	A. E. Leatham.

¹ The measurements are taken from the summit of the occiput to the front of the upper jaw.



TIGER 493



Head of Tiger.

The TIGER (Felis tigris).

Sher or Bagh, Hindustani.

A much less noisy animal than the lion, the great striped cat of Asia is also a more variable species, of which several local races are recognised. First is the typical Bengal tiger, a large, long-limbed, lithe, and short-haired creature. A smaller and rougher-haired race (F. tigris septentrionalis, likewise known as F. t. virgata) inhabits the Caspian provinces of Persia, and also extends into the Caucasus. The Manchurian tiger (F. t. mongolica) is characterised by its large size, heavy build, short limbs, and the great length and thickness of the winter coat, which may be less fully striped than in Indian specimens. The Javan tiger (F. t. sondaica) differs, among other features, by the amount of white on the face. The Maharaja of Cooch Behar measured a tiger standing 3 ft. $10\frac{1}{2}$ ins. at the shoulder.

Distribution.—From the Caucasus through Northern Persia, India, Assam, Burma, the Malay Peninsula, Sumatra, Java, and China, to Manchuria, Amurland, and Korea. In India ranging from an elevation of some 7000 feet in the Himalaya to Cape Comorin, but unknown in Ceylon.

OWNER'S MEASUREMENTS.

Owner,		H.H. the Maharaja of Datia.	Col. Evans Gordon.	LieutGen. Sir R. Hart.	His Majesty The King.	Sir Savile Crossley, Bart.	The late A. M. Markham.	E. W. Dixon.	W. Holland.	Major S. H. Pollen.	H.H. the Maharaja of Cooch Behar.	The late A. M. Markham.	H.H. the Maharaja of Datia.	H H the Moharoia of Cooch Rehar		H.H. the Maharaja of Alwar.	H.H. the Maharaja of Bikanir.	H H the Maharaja of Cooch Rehar	intie de managa of coon penal.	H. Bliss.	H.H. the Maharaja of Cooch Behar.
Locality.		Seonda	Ramshai Hâb,	rams, rengar	Cooch Behar	Nepal	Bijnor, United	Nepal Tarai	Kanara	Duars	Cooch Behar .	Patli Dun, United	Seonda	Cooch Behar	· Donat	Alwar	Central Provinces	Cooch Behar		Rewa, C.P.	Cooch Behar
Weight.	lbs.	:	491	:	504	:	:	:	:	:	487	:	:	530	546	÷	:	462	0009	÷	540
Estimated height at shoulder.	ft. ins.	:	3 4	:	3 5	:	3 6	÷	:	:	3 4½	3 4	4 2	$3 3\frac{1}{2}$	3 3	:	:	3 43	3 83	:	3 4
Head.	ins.	38	36	:	36	:	39	:	:	:	36½	$32\frac{1}{2}$:	$38\frac{1}{2}$	÷	:	:	38	40\frac{1}{2}	:	36
Girth. Fore-	ins.	:	₽61	$19\frac{1}{2}$	183	:	21	:	:	:	$19\frac{1}{2}$	19½	15	20	20	:	÷	133	21	:	21
Upper arm.	ins.	:	25	:	26	:	:	:	:	÷	29	÷	31	263	56	:	:	283	29	:	56
Esti- mated girth of body.	ins.	:	$56\frac{1}{2}$:	51	:	52	:	:	:	52	49	$58\frac{1}{2}$	483	55%	:	÷	$51\frac{1}{2}$	54	99	52
Length dressed.	ft. ins.	:	12 I	:	12 10	÷	$12 2\frac{1}{2}$	÷	:	:	12 I	12 2	:	:	:	:	:	12 4	11 7	12 6	:
Length of body.	ft. ins.	:	0 4	7 13	11 9	:	7 13	2	:	:	7 13	7 1	7 2	0 1	0 4	÷	:	01 9	7 13	:	11 9
Length before skinned.	ft. ins.	0 11	(A) 7 OI	10 5½	10 5	10 5	10 4	10 4	IO 4 (D)	IO 4 (F)	10 3	10 3 (c)	10 3	IO 2½	10 2	10 2	10 2	10 13	IO $1\frac{1}{2}$	10 01	10 0

6 10½ 11 6½ 52 6 10½ 50½ 28¾ 6 9 50½ 28¾ 6 11 54 29 6 10¼ 55 6 10¼ 55 6 10¼ 55 6 10¼ 55 6 10¼ 55 6 10 9 48 24⅓ 6 6 48 24⅓ 6 2½ 6 6 48 24⅓ 6 2⅓ 6 2⅓ 6	Pilibhit H. Ruttledge.	Nepal Tarai . R. Nolan.	Central Provinces Major M. D. Goring-Jones.	Cooch Behar . Count E. Hoyos.	Mirzapur . P. B. Vander Byl.	Cooch Behar . A. Ezra.	Do Major S. H. Pollen.	Central India . Capt. A. R. B. Cossart.	Nepal Tarai . Col. B. B. Russell.	Hyderabad, Deccan A. M. Rotheram.	Central Provinces Prince A. Taxis.	Hyderabad, Deccan Major C. E. G. Norton and Capt.	Central Provinces LieutCol. R. W. Mapleton.	S. India American National Collection.	Tarai LieutCol. B. D. Möller.	North Kanara . Lieut. Col. L. L. Fenton.	Cooch Behar . Lord Villiers.	Deccan Major W. J. R. Wingfield.	Nepal Tarai . Lieut. Col. H. F. Dease.
$\begin{array}{cccccccccccccccccccccccccccccccccccc$:	:	700	:	:	508	200	:	i	:	÷	:	:	495	;	÷	:	÷	:
6 10½ 11 6½ 52 22 6 10½ 50½ 28¾ 20¼ 6 11 54 29 19½ 6 10¼ 55 6 10¼ 54 29 19½ 6 10¼ 55 6 10¼ 55 6 10¼ 55 6 10¼ 55 6 2½ 48 24½ 17 10 9 6 2½ 45 7 42 20 15		:			÷		÷	÷	:	÷	:		:	:	:	÷	÷	÷	:
6 10½	:	:	:	37	÷	$39\frac{1}{2}$:	:	:	÷	i	$34\frac{1}{2}$:	:	:	:	35	43	:
6 10½ 11 6½ 52 6 10½ 2 6 10½ 54 6 10½ 12 10 6 10¼ 54 6 10¼ 55 6 6 48 11 8 6 10 48 10 9 6 2½ 42 6 2½ 42 6 2½ 42	:	;	22	204	:	19½	:	:	:	:	:	17	:	:	:	:	15	17	20
6 10½ 11 6½ 6 10½ 6 11 6 11 6 11 6 10.	:	÷	:	283	:	29	:	:	:	:	÷	243	:	÷	÷	:	20	:	:
6 10½ 12 12 1 6 10½ 12 12 1 6 10¼ 12 12 1 6 6 6 6 10 1 11 11 12 1 10 11 1	52	:	:	50 1	:	54	:	55	:	÷	:	48	;	50	45	÷	42	:	÷
			i	:	:	:	12 10	:	:		;	:	6 01	:	:	i	:	:	÷
	:	:	6 10½		÷	11 9	$6 10\frac{1}{2}$	‡01 9		:	:	÷	:	;	:	:		:	6 43
10 0 (E) 9 11½ (H) 9 111 9 10½ 9 10½ 9 10½ 9 10½ 9 10 9 8½ 9 8½ 9 8½ 9 8½ 9 8½ 9 8½ 9 8½ 9 8½		0 0 (E)	9 II½ (H)	11	9 10½					01 6	01 6								8 6

Tigers have been recorded from time to time which are said to have measured up to 12 feet and over.



Manchurian Tiger-Skin.

Skulls.

Length from back to front.1	Breadth across the zygomatic arches.	Weight cleaned.	Locality.	Owner.
-154		105. 02.	Cooch Behar	H.H. the Maharaja of Cooch Behar.
$-15\frac{3}{4}$	I I ½		?	Col. A. Pollock.
151/8	$10\frac{1}{4}$		Cooch Behar	Lord Stavordale.
-15 (A·)	103	•••	Bengal	Col. Evans Gordon.
14 ⁷ / ₈ (F)	10		Duars	Major S. H. Pollen.
14½ (G)	103	•••	Deccan	Major W. J. R. Wingfield.
$-14\frac{1}{2}$	10		Tarai	Bombay Natural History Society.
$14\frac{1}{2}$	108		Central Provinces .	Major W. H. Hunter.
$-14\frac{1}{2}$ (C)	104	***	Bijnor District, United	The late A. M. Markham.
144	95/8	4 12	Duars	Sir Edmund G. Loder, Bart.
144 (н)	$10\frac{1}{2}$	5 2	Central Provinces .	Major M. D. Goring-Jones.
141	108	•••	Do	LieutCol. E. A. D'Arcy Thomas.
14½ (D)	$9\frac{1}{2}$	***	Kanara Jungles .	W. Holland.
14½ (E)	$9\frac{1}{2}$		Tarai	R. Nolan.
141/8	$9\frac{3}{4}$	4 8	Rewah	H.H. the Maharajah of Rewah.
134	98	4 10	N.E. Bengal	A. M. Murdoch.
-13¾ (B)	91	***	North Kanara .	LieutCol. L. L. Fenton.
133	93	4 10	Mirzapur	P. B. Vander Byl.
134	$9\frac{1}{16}$	4 6	?	Col. H. W. Gordon,
$13\tfrac{1}{2}$	10	5 0	Persia	LieutCol. R. L. Kennion.
♀ 13¼	$9_{\overline{1}}^{3}_{\overline{6}}$		Kalchi	H. B. Learoyd.

- Owner's measurements. A, B, C, D, E, F, G, H. For skins see pp. 494-495.

Skins.

Length of skir	dressed.		Loc	cality.		Owner.
	ins.	Mongolia				A. Bignold.
12	4	Do.				H.H. the Sultan of Johore.
12	0	Do.				H.R.H. the Duc d'Orléans.
ΙΙ	$3\frac{1}{2}$	Do.				Col. W. Hall Walker.
10	8	Persia				LieutCol. R. L. Kennion.

¹ See note on p. 491.

The LEOPARD (Felis pardus).

Chita, Hindustani.

Damissa, Hausa.

Harvard, M'Kua.

Ingwi, Zulu, Swazi, Matabili,
and Matonga.

Inkwi, Bechuana and Basuto.

Nimr, Sudani.
Ngo, Waganda.
Nyalugwi, Manganza.
Shabel, Somali.
Siveri, Alomwi.
Tijger, Cape Dutch.

The leopard has an even larger range than the lion, and is probably the most widely distributed of all the cats. Sportsmen in India recognise a larger "panther" and a smaller "leopard," although naturalists fail to distinguish them as separate forms. The typical representative of the species is the larger Indian leopard. African leopards often have the spots on the body of smaller size, and many of them without light centres, like those on the head. The West African race is F. pardus leopardus, and large-spotted East African leopards have been named F. p. suahelica and F. p. ruwenzorii. The Somali F. p. nanopardus is a very small light-coloured race. In Persia, Baluchistan, the mountains of Sind, and probably Kashmir, is found a race of the leopard (F. p. panthera or tulliana), characterised by its pale colour, long fur, and thick tail. The Malay leopard (F. p. variegata) is a largespotted race; as is also the Korean and Chinese F. p. orientalis. Very distinct is the Amur and Manchurian F. p. villosa, an animal of heavy build, with a pale ground-colour to the fur, which is very long and thick, and the spots in the form of large complete rings. In the forest districts of Asia black leopards are not uncommon, and they also occasionally occur in Abyssinia, the home of the large F. p. nimr. Some Siamese leopards show small spots within the dark rosettes. Height at shoulder, from about 2 feet (India) to 2 feet 4 inches (Africa). A large leopard killed by Lieut.-Col. L. L. Fenton in the Gir Forest, Kathiawar, measured 7 feet $8\frac{1}{9}$ inches in length; the length of the tail being $35\frac{1}{9}$ inches, the girth of the neck $21\frac{1}{9}$ inches, of the forearm $11\frac{1}{9}$ inches, and of the body behind the shoulder $35\frac{1}{9}$ inches; weight, 160 lbs.

Distribution.—Africa, the Caucasus, Asia Minor, and Asia generally, with the exception of Northern Siberia, the Tibetan plateau, and Japan.

OWNER'S MEASUREMENTS—INDIAN SPECIMENS.

Ler bef skin		Total length dressed.	Weight.	Locality.	Owner.
	ins.	ft. ins.	lbs.		
8	6	• • •		Kashmir	Major A. G. Arbuthnot.
8	4			S. India	F. Gompertz.
8	4			Cooch Behar .	H.H. the Maharaja of Cooch Behar.
8	2 ¹ / ₃			Do	Do.
8	$I\frac{1}{2}$			Central Provinces	Capt. G. W. Hemans.
8	0		154	Cooch Behar .	H.H. the Maharaja of Cooch Behar.
8	0	8 81		India	Count J. Potocki.
7	ΙΙ			Mandla	O. Kauffmann.
7	10	8 4\frac{3}{4}	***	Ganges Kadir .	See below. ¹
7	IO			Mhow	Major F. W. H. Walshe.
7	10			Nepal	LieutGen. Kaiser Shumsher Jung, R.B.
7	$9\frac{1}{2}$	8 6		Central Provinces	Col. J. J. Harrison.
7	9	,		Nepal	C. H. H. B. Caldwell.
7	9			Oudh	Mrs. Innes.
7	8	•••		Hyderabad, Déccan	Major C. E. G. Norton and Capt. Sir K. Fraser, Bart.
7	8			Ganges Kadir .	Muttra Tent Club. ²
7	8			U. Burma	H. Shaw Dunn.
7	7	$8 7\frac{1}{2}$		Siwaliks	E. H. E. Green.
7	7	8 10		Central Provinces	Capt. R. D. Gard'ner.
₽7	4	8 I	145	Bijnor District .	Major E. McK. Williams.

Speared by Capt. H. Hoare (5th D.G.), Major J. G. Rotton (R.A.), and Major W. Gillman (R.H.A.).
 Speared by Major A. C. King and some officers of the 5th Lancers, when out with the Muttra Tent Club.

The following are the dimensions of two leopards shot in Ceylon by Count Scheibler:—

Journe De	110101	CI.						M	ale.	Ŀ	'ema	le.
								ft.	ins.	f	t. i	ns.
Length fro	m tip	of nos	e to e	nd o	of tail			7	0	6		4
"		,,	r	oot o	of tail			4	$3\frac{1}{2}$	3	3	7
Height at	should	ler (est	timate	d)				2	$2\frac{1}{2}$	1		9
Girth .								2	7	2	2	I
Circumfere	nce of	f uppe:	r arm					0	13	C) I	Э
,,		forea	rm					0	$10\frac{3}{4}$	0		81

The following specimen belongs to one of the Chinese or Manchurian races:—

Lei bei skin	ngth fore ined.	Total length dressed.	Weight.	Locality.	Owner.
ft.	ins.	ft. ins.	lbs.		
ð 5	ΙΙ		65	Tai Kung Shan Moun- tains	Commander the Hon. R. O. B. Bridgeman, R.N.

OWNER'S MEASUREMENTS—AFRICAN SPECIMENS.

	h before med.	Height at shoulder.	Weight.	Locality.	Owner.
ft.	ins.	ft. ins.	lbs.		
8	7			East Africa	K. V. Painter.
8	$I\frac{1}{2}$	***		Niwimbi, Portuguese Nyasaland	
7	$10\frac{1}{2}$	$2 7\frac{1}{2}$		Sudan	Marquis Pizzardi.
₽7	9	$2 3\frac{1}{2}$		Matabililand	Rhodesia Museum.
7	9			Sudan	Gustav von Dippe.
7	$7\frac{1}{2}$	2 6		East Africa	Percy C. Madeira.
7	6			Do	Lady Grisel Hamilton.
7	4			Do	L. F. Eames.
7	$3\frac{1}{2}$			Somaliland	Count J. Potocki.
7	34		$136\frac{1}{2}$	N.W. Rhodesia	C. H. S. Bellis.
7	3			Wadelai, E.C. Africa .	MajGen. W. P. Pulteney.
7	2			Somaliland	Count Scheibler.
7	0		110	Sudan	W. B. Cotton.
6	$10\frac{1}{2}$	$2 4\frac{1}{2}$		Gondokoro	Dr. A. MacCarthy Morrogh.
6	10			Somaliland	Count Scheibler.
6	10		140	Nyasaland	A. White.
6	3			Somaliland	Norman B. Smith.
6	0			Do	Count E. Hoyos.
₽5	$10\frac{1}{2}$	2 I	55	East Africa	Capt. R. Meinertzhagen.
5	7	I IO (girth 21½ in	 s.)	Nigeria	MajGen. T. D. Pilcher.

The following specimens were shot and measured by Mr. F. Vaughan Kirby; the first being from the Nguanetsi River, and the second from the Matamiri Bush, S.E.A.:—

Length, tip to tip in a straight line.	Length over all— "sportsman's" measurement.		Girth of hehind shoulder. Girth of Length of Zygomatic Cleaned forearm. skull. width. Weight.	
ft. ins.	ft. ins.	ft. ins.	ins. ins. ins. ins. lbs. oz.	
6 11	7 2	2 7	22 $35\frac{1}{2}$ $12\frac{1}{2}$ $9\frac{7}{8}$ $6\frac{1}{8}$ I 8	
6 9	7 2	2 7	20 33\frac{1}{4} 9 5\frac{1}{4}	
			Skulls.	
Total length.	Width.	Weight.	Locality. Owner.	
ins	ins.	lbs. oz.		
I I ½	7호	I I2	Gabun Sir Edmund G. Loder, Ba	ırt.
10§	6 ₁ 3		N. Nigeria B. C. Parr.	
-101	65		Bijnor District, United The late A. M. Markham.	
101			White Nile A. L. Butler.	
-10 ₁ 3	61		Gir Forest, Kathiawar . LieutCol. L. L. Fenton.	
10	$6\frac{1}{2}$	1 6	Belgaum, India Sir Edmund G. Loder, Ba	rt.
919	6 1		East Africa L. F. Eames.	
9	51 8	1 3	Somaliland J. H. Thomson.	

⁻ Owner's measurements.

The SNOW-LEOPARD or OUNCE (Felis uncia).

Shieh Pao, of Chinese.

Although the Persian leopard is in some degree intermediate in respect to colour and the length of the coat, the ounce differs from the leopard by the ground-colour of the long and dense fur being dirty white, with the spots on the back, sides, and tail in the form of large, irregular, ill-defined and interrupted rings, and by the great thickness of the tail, which scarcely tapers, and is about three-quarters the length of the head and body. Height at shoulder, about 2 feet 4 inches.

Distribution.—The high ranges of Central Asia, including Gilgit, Hunza, Turkestan, Trans-Baikalia, Ladak, Tibet, Amurland, and Western China, extending in the north-west to the Altai, and in the west, it is said, to Persia. In Prince Demidoff's Hunting Trips in the Caucasus a snow-leopard is figured as coming from that range, but the animal found there is F. pardus panthera. The snow-leopard generally dwells at elevations of over 8000 feet, but descends in Gilgit during winter to 6000 feet.

Length	dressed.	Weight.	Locality	y.		Owner.
8	8		Central Asia		,	A. Ezra.
8	8	***	Baltistan .			Capt. C. M. Hawes.
8	6		3			Capt. B. C. Graham.
8	6	Skull, $7\frac{3}{4} \times 5\frac{1}{4}$	Baltistan			R. Rankin.
8	2½ (w)	•••	Do.			E. Langworthy.
7	10	•••	Near Leh .			LieutCol. S. Frewen.
-7	8		China .			M. Mitchell.
-7	53		Pamir .			Viscount Edmond de Poncins.
-7	5	•••	?			LieutCol. F. J. Harden.
-7	4	Skull, $7\frac{1}{16} \times 4\frac{7}{8}$	Kashmir			LieutCol. H. C. Tytler.
-7	4	(24 inche	es at shoulder)			The late R. A. Sterndale.

⁻ Owner's measurements.

The CLOUDED LEOPARD (Felis nebulosa).

Kwei ko-pao, Chinese.

The arimau-dahan, as this species is called by the Malays, is the size of a small leopard, with a very long and thickly furred tail, and large upper tusks. The ground-colour of the fur varies from greyish brown to fulvous, upon which are large dark blotches, frequently bordered in part with black. In old specimens the blotches often disappear, leaving only the black borders.

Distribution.—From the Sikhim and Bhutan Himalaya, through Assam, Burma, Siam, and the Malay Peninsula, to Sumatra, Java, and Borneo. Represented by a smaller race (F. nebulosa brachyurus), with somewhat different markings and a shorter tail, in Formosa.

Skins.

Lengtl	n dressed.	Weight. lbs.	Locali	ity.	Owner.
-6	6		Assam .		The late B. H. Hodgson.
6	5	***	Yun-nan		M. Mitchell.
6	4	$44\frac{1}{2}$?		The late R. A. Sterndale.
6	3	•••	?		Sir Guy Fleetwood Wilson.
5	10	•••	Sumatra.		British Museum.
5	9	***	?		Major B. R. M. Glossop.
5	$7\frac{1}{2}$		Assam .		P. Russel.

⁻ Owner's measurements.

Skulls.

Basal length from back to front.	Breadth.	Locality.	Owner.
6.2 ins.	4.75	Assam	. The late B. H. Hodgson.

The JAGUAR (Felis onca).

This cat may be regarded as the American representative of the leopard, which it fully equals, even if it does not exceed, in size. The colour and markings are generally similar to those of the latter, but the dark rings are larger and arranged more definitely in groups, each ring usually enclosing one or more dark central spots, and the enclosed light area being of the same tint as the general ground-colour of the fur, which is typically of a rich tan. Usually seven or eight more or less distinct longitudinal rows of rosettes may be noticed on each side of the body. The tail is shorter than a leopard's.

Distribution.—America, from Louisiana, Texas, and Northern Mexico to about the Rio Negro on the northern confines of Patagonia in lat. 40° S.

Length skin	before ned.		ngth ssed.	Lo	cality.		Owner.
ft.	ins.	ft.	ins.				
-9	3	9	3	Brazil			Count Henry Coudenhove.
-8	3 ^{'3} / ₄			Do.			Do.
-6	II	7	9	Paraguay			Col. J. J. Harrison.

The PUMA (Felis concolor).

With the exception of the small and long-tailed jaguarondi and eyra, the puma (pronounced pooma) is the only uniformly coloured cat found in America, where its range extends from British Columbia and Maine in the north to the Strait of Magellan in the south. The size is inferior to that of the jaguar, the height at the shoulder being about 2 feet, and the weight 150 lbs. The general colour of the fur is tawny, tending, like that of the white-tailed deer, to reddish in summer and to greyish in winter, with the middle of the back darker, and a whitish patch on the back of the otherwise black

ears. But with such an enormous geographical range, it is inevitable there should be much local variation; and a number of races are now recognised, most of which are distinguished by size or the redder or greyer tint of the fur. A Patagonian race has pale ears.

Length before skinned.	Weight.	Locality.	Owner.
ft. ins.	lbs.		
-8 6	about 150	?	A. Pendarves Vivian.
$-7 6\frac{5}{8}$		Brazil	Count Henry Coudenhove.
-7 5		Gallegos River, Patagonia .	W. Moncreiffe.
-7 3	•••	Fraser River, British Columbia.	The late J. Fannin.
-7 0	•••	Wyoming	J. L. Scarlett.

⁻ Owner's measurements.

LYNXES (Felis [Lynx] lynx, etc.).

The lynxes form a well-marked group connected with the more typical members of the cat tribe by the jungle-cat (F. chaus), and distinguished by the tuft of long hairs at the summit of the ears, and the absence of the first upper cheek-tooth. From the others the caracal (F. caracal), of Africa and India, is broadly distinguished by its long tail and uniform rufous colour. The short-tailed lynxes are, however, a group in which it is very difficult to determine whether the variations indicate distinct species or local races. In the typical European lynx (F. lynx) the tail is very short, the throat has a ruff of long hair, and the coat is spotted with dark brown, the Tibet lynx (F. lynx isabellina) is a pale race, and the Canadian lynx (F. lynx canadensis), which ranges as far south as California, is another race; while the Caucasian and Persian lynx is now classed as a distinct species, F. cervaria. The red lynx (F. rufa), which is also widely extended in America, and has numerous local races, is a third species. From differences in the form of the skull, the Spanish lynx (F. pardina), which is a fully spotted animal, is also classed as a distinct species. It ranges over a large portion of Southern Europe, including Turkey, Greece, Sicily, Sardinia, and Spain and Portugal. The ordinary lynx stands from 16 to 18 inches at the shoulder.

LYNXES 505

A.—EUROPEAN LYNX (Felis lynx).

Length before skinned.	Estimated height at shoulder.	Locality.	Owner.
-49½ ins.		Andalusia	Abel Chapman.
-46 ,,		Near St. Petersburg	Count Bobrinskoy.
-42'9 ,,		Eastern Carpathians	Prince Henry of Liechtenstein.
-42 ,,	23	Do.	Count Henry Coudenhove.

B.—CANADIAN LYNX (F. lynx canadensis).

Length before skinned.	Height at shoulder.	Weight.	Locality.	Owner.
-38 ins.	25	60 lbs. (about)	Wyoming	. Major G. Dalrymple White.
			- Owner's measurements	

C.—RED LYNX (Felis rufa).

Length before skinned.	Height at shoulder.	Weight.	Locality.	Owner.
-33 ins.	17		Wyoming	. Capt. M. McNeill.
-32 ,,	22	40 lbs. (about)	Nova Scotia .	. Major G. Dalrymple White.

D.—CARACAL (Felis caracal).

Flat skin. Locality. Owner. $-46\frac{1}{2}$ ins. Nr. Grahamstown, S. Africa . Dr. H. Smith.

- Owner's measurements.

The HUNTING-LEOPARD or CHITA (Cynælurus jubatus).

Although this animal is commonly called chita (cheetah) by Anglo-Indian sportsmen, that name is at least as often applied in India to the leopard. From all the true cats and lynxes the hunting-leopard differs by the claws being capable of only partial withdrawal into their sheaths, so that their tips are always exposed. The body also is more slender, and the limbs are proportionately longer. The black spots on the skin are small and without light centres, like those on the head of the leopard. Length, 7 feet or less; height at shoulder, 30 to 39 inches. A specimen speared by Lieut.-Col. L. L. Fenton in Kathiawar measured 6 feet $\frac{1}{4}$ inch in length, the tail being 2 feet $2\frac{1}{4}$ inches.

In Africa the chita is the "Ihlose" of the Zulus and Swazis. It is distributed sparsely throughout S.E. Africa. Hunting-leopards usually hunt in couples, and fairly stalk their game, securing it with a swift rush at the last. Mr. F. Vaughan Kirby wrote that "I have seen a party of six hunting together and another of eight. Though I have often tried, I have never yet succeeded in running into one on horseback; they are incredibly swift of foot. They invariably kill their prey by strangulation." Many local races have been named.—

Distribution.—Africa and South-Western Asia, extending from Persia to Western Turkestan and the countries east of the Caspian, and eastwards into India; unknown in the latter country on the Malabar coast and to the north of the Ganges, as it also is in Ceylon.

Length before skinned.			Length of tail. Estimated height at shoulder.		Locality.			Owner.
ft.	ins.	ft.	ins.					
-7	9				East Africa			Capt. R. Meinertzhagen.
-7	31				N.W. Rhodesi			C. H. S. Bellis.
-6	6	2	2		East Africa			Percy C. Madeira.
-6	6	2	$6\frac{1}{2}$	***	Zululand .			A. Cameron.
-6	$4\frac{3}{4}$	2	$3\frac{1}{2}$	$28\frac{1}{2}$	N.E. Transva:	al		Dr. Percy Rendall.
-6	3	2	4 3	$29\frac{1}{2}$	East Africa			H. C. Williams.
					- Owner's measu	iremen	ts.	

The following are the dimensions of a specimen shot in the Eastern Transvaal by Mr. F. Vaughan Kirby:—

Total length in straight line. Do. over all. Tail. Vertical height. Girth of forearm. Do. shoulders.

6 ft. 8 ins. 7 ft. 7 ins. 2 ft. 9 ins. 2 ft. 11½ ins. 8½ ins. 31 ins.

The SPOTTED HYÆNA (Hyæna [Crocuta] crocuta).

Uaraba, Somali.
Yangula, Danakil.
Jib, Abyssinian.
Kuva, Hausa.
Kochupa, M'Kua.
Marfain, Sudani.
Ugandu, Mpisi.
Setongwani, Barotsi.
Piri, Ngami.
Chimbwi, Chilala and Chibisa.

The hyænas form a small family of Carnivora allied in some respects to the cats, but distinguished by the structure of the skull, the more numerous teeth (which are, however, to a considerable extent cat-like), and the four-toed feet, with non-retractile claws. The spotted hyæna, of which there are several races, is the largest of the three species, and takes its name from the large dark blotches on its tawny coat. Its carnassial teeth are more cat-like than those of the other species.

Distribution.—Africa, south of the Sahara.

Length before skinned.	Length of tail.	Extreme length over all.	Estimated standing height.	Girth behind shoulders.	Weight.	Locality.	Owner.
ft. ins.	ft. ins.	ft. ins.	ft. ins.	ins.	lbs.		
-5 o				29	121	East Africa	Capt. R. Meinertz-
$-4 9\frac{1}{2}$	I I	6 3	3 0	$39\frac{1}{2}$			hagen. F. Vaughan Kirby.
-4 8			2 6			Somaliland	J. H. H. Dodds.

Skulls.

Length.	Width.	Weight.	Locality.	Owner.		
ins. -124	ins. 7 1	lbs. oz. 2 8	South-East Africa	. F. Vaughan Kirby.		
$-12\frac{1}{4}$	7 8	2 12	Zomba, B.C.A.	. D. MacAlpine.		
12	8		Somaliland .	J. H. H. Dodds.		
II $\frac{1}{2}$	$7\frac{3}{16}$		Benue Valley .	. Capt. E. J. Wolseley.		
-11	$7\frac{1}{2}$	•••	Somaliland .	Viscount Edmond de Poncins.		
-10g	$6\frac{5}{8}$		South-East Africa	Sir Edmund G. Loder, Bart.		
-10 ⁵ / ₈	$6\frac{7}{8}$	2 3	East Africa .	The late Rear-Admiral R. A. J. Montgomerie, R.N.		

The STRIPED HYÆNA (Hyæna striata).

Distribution.—India, Arabia, Syria, etc., and North and East Africa.

Length before skinned.	Length of tail.	Standing height.	· Locality.	Owner.
ft. ins.	ft. ins.	ft. ins.		
-4 $4\frac{1}{2}$		2 $2\frac{1}{2}$	Somaliland .	. J. H. H. Dodds.
-3 6	1 5		India	. The late Dr. T. C. Jerdon.

⁻ Owner's measurements.



Skull of Kamchatkan Bear.

BEARS (Ursidæ).

Bears are so unlike other animals and so like one another that no one has the slightest difficulty in recognising a member of the group when he sees it. They constitute a family of Carnivora—the *Urside*—and are spread over the greater part of the globe, with the exception of Africa to the south of the Sahara desert, and the Australasian islands. As some of their leading characteristics, mention may be made of their large bodily size, clumsy build, shaggy fur, generally uniform coloration, the very short tail, and the application of the whole sole of the foot to the ground in walking. The skull and teeth are likewise very peculiar and distinctive, although these need not be taken into consideration in this place.

In consequence of the marked similarity to one another of most members of the group, it is a matter of extreme difficulty to come to a definite conclusion as to the number of species of bears. The typical member of the group is the familiar brown bear (Ursus arctus) of Europe, in which the colour is generally a darker or lighter shade of brown, but occasionally tends to greyish. The Syrian bear (U. arctus syriacus), in which this greyish tinge predominates, may be regarded as a local variety, and the same is the case with the snow-bear of Kashmir (U. arctus isabellinus), in which the colour is generally a light creamy brown. European specimens probably seldom exceed 8 feet, but the East Siberian and Kamchatkan bears (U. arctus piscator) grow to 9 feet. Even more gigantic is the Kodiak bear (U. arctus middendorffi) of Kodiak Island, Alaska; while the Yezo bear (U. arctus piscator) grow to plapan is another large race, with much the external appearance of a grizzly. The Alaskan bear (U. arctus dalli), from the

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mainland of Alaska, is also a huge animal, slightly smaller than the one from Kodiak Island, with more resemblance to an ordinary brown bear than to a grizzly. The grisly, or grizzly, of the Rocky Mountains is a smaller bear, with longer, straighter, and whiter claws, and is generally regarded as representing a second species (*U. horribilis*). A race of this species is the Barren-Ground bear (*U. h. richardsoni*); and the species may be represented in Asia by the Tien Shan *U. leuconyx*. Another member of the group is the Atlas bear (*U. arctus crowtheri*), of North-Western Africa, still imperfectly known. The extinct cave-bear (*U. spelæus*) is a large species allied to the brown bear.

The little blue bear (*U. pruinosus*) of Tibet, with more or less of white on the head and shoulders, seems to form a distinct species. The same is the case with the American black bear (*U. americanus*), which exhibits distinctive features in the skull and teeth, and is generally black, although it may be grey, or even white (*U. a. kidderi*). The Himalayan black bear (*U. torquatus*), which may be recognised by the conspicuous white gorget on the breast, is a relative of the last-named species. In Japan it is represented by the Japanese black bear (*U. japonicus*). One of the smallest species of the genus is the very distinct Malay bear (*U. malayanus*), which ranges into Sze-chuan; and allied to this is the spectacled bear (*U. ornatus*) of the Peruvian and Bolivian Andes, distinguished by the light-coloured rings generally surrounding the eyes from which it derives its name.

The most distinct of all the species included in the genus *Ursus* is the Polar bear (*U. maritimus*), so distinct, indeed, that many naturalists consider it ought to form a genus by itself. Externally its chief characteristics are its white coat, and the presence of a certain amount of hair on the soles of the feet; both these peculiarities being evidently adaptations to the Arctic habitat of the animal. Very old Polar bears exhibit a tendency to the development of a brownish tinge in the fur. Last of all comes the Indian sloth-bear (*Melursus ursinus*), which is so different from the other kinds as to represent a genus by itself. It is too well known an animal to need description, some of its characteristics being the long and bare snout, the ragged, wiry hair, extensile tongue, small cheek-teeth, and the diminished number of front teeth.

(a) Skulls.

Basal length from back to front.	Width across the zygomatic arches.	Weight cleaned.	Race, or Species.	Locality.	Owner.
ins.	ins.	lbs. oz.			
$-20\frac{1}{2}$	11‡	•••		Alaska	J. W. Anderson.
$18\frac{3}{4}$	113	12 0	Cave bear	Europe	Sir Edmund G. Loder, Bart.
$-18\frac{3}{8}$	103	•••	3	Alaska	F. T. Colby.
18	11	10 0	Kamchat- kan	Siberia	Hon. Walter Rothschild.
$17\frac{1}{2}$	$10\frac{7}{8}$	8 4	Alaskan.	Alaska	Capt. C. R. E. Radclyffe.
-17‡	103	•••	Do	Do	Rev. Dr. R. J. Nevin.
171	10	6 12	Kamchat- kan	Kamchatka .	P. Niedieck.
16	$9\frac{7}{8}$	5 8	Polar .	Novaia Zemlia	J. Lamont.
158	$10\frac{1}{2}$	5 13	Do	Polar Seas .	Sir Edmund G. Loder, Bart.
$15\frac{1}{1}\frac{3}{6}$	$9\frac{5}{8}$	5 8	Do	Greenland .	C. A. Hamilton.
$15\frac{3}{4}$	$9^{\frac{1}{16}}$	5 14	•••	Kamchatka .	Capt. C. R. E. Radclyffe.
$15\frac{1}{2}$	108	6 г	•••	Alaska	L. J. Cadbury.
$15^{\frac{1}{2}}$ (D)	$9\frac{1}{2}$	5 10	Grizzly .	Brit. Columbia	Sir Peter Walker, Bart.
158	94	4 10	Kamchat- kan	Kamchatka .	Capt. R. E. R. Benson, R.N.
15\frac{1}{8}	9_{16}^{7}	5 10	Do	Do	W. S. Race.
$14\frac{11}{16}$	9		Brown .	Do.	St. George Littledale.
-145	81/8	4 2	Grizzly .	Montana .	Sir Edmund G. Loder, Bart.
$14\frac{1}{2}$	81	4 8	Do	Brit. Columbia	S. B. Bennett.
14§ (C)	81	5 0	Do	New Mexico.	Montague Stevens.
141	8‡	3 12	Brown .	Europe .	Walter Winans.
135	83		Snow .	Kashmir .	Capt. B. H. Shaw-Stewart.
-13 ¹ / ₈	8	3 І	Do	Do	Sir Edmund G. Loder, Bart.
127	$8\frac{3}{1.6}$	3 3	Black .	Nepal	LieutGen. Kaiser Shumsher Jung, R.B.
$-12\frac{7}{8}$	7	***	Sloth .	Mysore .	Capt. M. McNeill.
$I2\frac{1}{2}$	7 ³		Do	Cent. Prov	C. F. Egerton.
$12\frac{1}{2}$	7	•••	Grizzly .	Wyoming .	J. L. Scarlett.
$12\frac{1}{2}$ (B)	$6\frac{3}{4}$		Sloth .	Cent. Prov	Surgeon-Major M. O'C. Drury.
128	78	•••	Snow .	Kashmir .	A. Ezra.
128	$7\frac{1}{2}$		Do	Do	Col. C. B. Wood.
$12_{ m S}^3$	73	3 0	Black .	Do	P. B. Vander Byl.
128	7 ⁵		Grizzly .	Wyoming .	J. L. Scarlett.
12	7 ₺		Sloth .	Cent. Prov	C. F. Egerton.
-II ⁷ ₈	71		Black .	Newfoundland	Percy C. Madeira.
II 2 (A)	6≩		Brown .	W. Caucasus	St. George Littledale.

⁻ Owner's measurements.

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OWNER'S MEASUREMENTS.

Length before skinned.	Length of raw skin.	Estimated height at (shoulder.	Girth.	Weight.	Race, or Species.	Locality.	Owner.
ft. ins.	ft. ins.	ft. ins. ft	t. ins.	lbs. 1656	Kodiak .		J. C. Tolman.
	11 6				?	Alaska	American Museum of
	11 0	4 0		1460	?	Do	Natural History. J. W. Anderson.
	9 8	•••		• • •	Alaskan	Do	South African Museum.
•••	9 5				Do.	Do	Dublin Museum.
	9 5	4 6			Polar .	Baffin Bay .	W. Livingstone-
	9 5	•••			Alaskan	Alaska	Learmonth. Hon. Walter Rothschild.
$7 9\frac{1}{2}$	9 4			1014	Do.	Do	Capt. C. R. E. Radclyffe.
	-9 4	8 6 (across		•••	Do.	Do	American National Collection.
	8 10	front paws)			Do.	Do	British Museum.
8 10		(mounted)			Polar .	Barents Seas.	Duke of Peneranda.
8 7				1600	Do	Arctic Seas .	Captain Lyon.
	8 7				Grizzly .	Wyoming .	T. P. Kempson.
8 7					Polar .	Spitzbergen .	. A. Barclay Walker.
8 6					Do	Franz Josef	Dr. S. H. T. Armitage.
8 5					Do	Land Greenland .	Col. Max C. Fleischmann.
	8 5				Black .	Kashmir .	LieutCol. W. Westropp White.
8 3					Kam- chatkan	Kamchatka .	Dr. F. H. H. Guillemard.
8 2				1020	Polar .	Greenland .	C. A. Hamilton.
	8 o ¹ / ₂				Grizzly .	Wyoming	. T. W. H. Clarke.
8 o		4 3½			Alaskan	Alaska .	. J. H. Kidder.
7 8				•••	Snow .	Kashmir	. W. Graham.
	8 o(D) 3 II			Grizzly .	Brit. Columbia	a Sir Peter Walker, Bart.
	8 o(c)		735	Do	New Mexico	. Montague Stevens.
	7 11			800	Brown .	Norway .	. Capt. Gerard Ferrand.
	7 9			(about)	Snow .	Kashmir	. LieutCol. C. F. Blane.
7 1					Sloth .	?	W. L. Hogg.
	7 5½	•••			Black .	Wyoming	. T. W. H. Clarke.
	7 5½				Brown .	Hungary .	. Count M. Andrássy.
	7 4				Snow .	Kashmir	. Capt. B. H. Shaw-Stewart.

Length before skinned.	Length of raw skin.	Estimated height at shoulder.	Girth.	Weight.	Race, or Species.		Locality.	Owner.
ft. ins.	ft. ins. $7 O_{4}^{3}$	ft. ins.	ft. ins	. lbs. 680 (about)			Lithuania	. Prince Radziwill.
• • •	7 0				Snow		Kashmir	. Major C. McI. Ritchie.
	7 0	3 2			Sloth		India .	. LieutCol. A. E. Ward.
	6 11	•••			Black		Wyoming	. Col. J. J. Harrison.
	6 10	3 0	4 4½ forearm	423	Sloth		Cooch Behar	. H.H. the Maharaja of Cooch Behar.
•••	6 10	4 I			3		Alaska .	. R. P. Blake.
•••	6 $9\frac{1}{2}$		25		Snow		Kashmir .	S. V. Occleston.
	6 83	•••			Black		Garhwal .	Capt. A. W. Robertson-
	6 8 (в)			Snow		Kashmir .	Glasgow. A. Ezra.
	6 8	4 0		625	Kodiak		Kodiak I.	A. W. Merriam.
6 7					Black		Kashmir	LieutCol. L. L. Fenton.
	6 7				Do.		N. Brunswick	Sir Kenneth Crossley.
	6 6			700	Do.		Nepal	Lieut Gen. Kaiser
	6 6				Grizzly		Wyoming .	Shumsher Jung, R.B. Count E. Hoyos.
	6 5				Do.		Do, .	J. L. Scarlett.
	6 4				Black		Kashmir .	The Master of Belhaven.
	6 3				Grizzly		Wyoming .	J. L. Scarlett.
	6 21/2				Black		Brit. Columbia	Count E. Hoyos.
	6 $1\frac{1}{2}$				Sloth			Capt. B. H. Boucher.
	6 I				Cinnamo	on	Provinces Wyoming .	Col. J. J. Harrison.
	6 o ¹ / ₂				Sloth		Hyderabad .	Count E. Hoyos.
	6 о	3 0		280	Do.		?	The late G. P. Sanderson.
	6 о				Black	-	Newfoundland	Percy C. Madeira.
	5 IO2	3 0	3 4		Snow		?	LieutCol. H. M. Biddulph.
	5 5	$2 5\frac{3}{4}$	2 Io ³ / ₄		Black		Brit. Columbia	Count Scheibler.
	§ 5 2½	2 II 1	4 4		Grizzly		Do.	Do.
•••	5 2 (A	۸)		about	Brown .		W. Caucasus .	St. George Littledale.
5 2		3 4	2 8	242	Do.		W. Kan-su .	G. Fenwick-Owen.
	4 7		•••		Do.		Asia Minor .	H. O. Whittall.

N.B.—Some of the specimens entered as "Grizzly" may be the Barren-Ground bear.

WALRUS 513



Head of Walrus.

The WALRUS (Odobænus rosmarus).

The unwieldy seal-like animals commonly known by a corruption of the Scandinavian name valross (whale-horse) form in some respects a connecting link between the true seals and the eared seals, although differing from both in the huge upper tusks which depend from the muzzle of males and females alike, as also by the thick yellow bristles covering the muzzle itself. Like the true seals, walruses have lost all traces of external ears, but, unlike the former, and like the eared seals, their huge hind-flippers are turned forwards beneath the body when on land. The molar teeth have simple flattened crowns, unlike those of most seals. Although young and adolescent walruses have fairly thick coats of yellowish fur, in old individuals the tough hide becomes almost bare, except for the aforesaid bristles. Walruses are estimated to attain a weight of from 2250 to 3000 lbs.

Walruses are exclusively confined to the Arctic seas, where they spend much of their time on the ice. There are two kinds, which

may be regarded as races of a single species; the one restricted to the North Atlantic, and the other to the North Pacific. The distribution of these animals is by no means of circumpolar extent, the Atlantic walrus (O. rosmarus) apparently not ranging on the Asiatic coast east of the mouth of the river Lena; while in America walruses do not appear to inhabit the vast extent of coast lying between the western shore of Hudson Bay and Alaska. The Pacific walrus (O. r. obesus), which is the larger of the two, with longer tusks, always had a restricted range, and is now scarce. Formerly the Atlantic walrus occurred in countless thousands, but in accessible situations its numbers have been greatly reduced, owing to incessant persecution for the sake of its valuable oil and ivory. Between 1870 and 1880 at least 100,000 of these animals are estimated to have been slain.

The largest walrus shot by Mr. W. Livingstone-Learmonth measured 12 feet 8 inches in length, and the tusks when extracted measured $25\frac{1}{2}$ inches in length and $8\frac{1}{2}$ in circumference at the largest part; but, as is the case with those of nearly all old bull walruses, they were much broken at the points.

Tusks.

Total length of tusk.	Length from gum.	Weight.	Girth.	Locality.	Owner.
36	30½	lbs. oz.	81/2	?	Sir Thos. Hesketh, Bart.
$-33\frac{1}{2}$	$25\frac{1}{2}$	7 $10\frac{1}{2}$	81/2	Kamchatka	British Museum (The late Major
32 ³ / ₈			8§	?	G. E. H. Barrett-Hamilton). Bethnal Green Museum.
32		10 12	IO^1_2	?	Sir Edmund G. Loder, Bart.
-32		9 9		Pacific .	Norwich Museum.
-32		8 8	9^{1}_{2}	Point Barrow	British Museum (Col. H. W.
$-31\frac{1}{2}$			87	Do	Feilden). American National Collection.
$31\frac{1}{2}$		9 4	9 3	Alaska¦ .	Prince Nicolas Ghika.
30 5			$9\frac{1}{8}$	Kamchatka	Lieut. H. A. Gillett, R.N.
29			9‡	Arctic America	C. C. Branch.
$-27\frac{1}{2}$			8\$	Pacific .	F. T. Colby.
-25 ⁵ / ₈			81/2	Do	British Museum (The late Major G. E. H. Barrett-Hamilton).
-251/2			8½	Baffin Bay .	W. Livingstone-Learmonth.
25		7 10	9	Bering Sea .	Lieut. C. H. G. Benson, R.N.
	$22\frac{1}{8}$		$7\frac{3}{4}$	Spitzbergen	Sir Edmund G. Loder, Bart.
	$20\frac{3}{4}$		$7\frac{1}{2}$	Do	Sir Victor Brooke's Collection.
	185		$7\frac{1}{2}$	Do	Arnold Pike.
	ş 18		44	Do	A. Barclay Walker.

⁻ Owner's measurements.



Skull and Tusks of Walrus in the collection of Sir Edmund G. Loder, Bart.

The NARWHAL (Monodon monoceros).

The Arctic narwhal is the only cetacean furnished with tusks. These are present only in the male, and generally the left one alone is developed. Occasionally, however, both grow, as exemplified in a specimen in the British, and a second in the Cambridge Museum. A model of this whale is exhibited in the British Museum.

Distribution.—Arctic Seas.

Tusks. Length. Circumference. Weight. Owner. ft. ins. lbs. Major H. A. Steward. $7\frac{1}{2}$ $4\frac{1}{2}$ Bethnal Green Museum. 8 81 85 8 72 H.R.H. the Duc de Montpensier. 9 17 Royal Scottish Museum. -8 7 8 Sir Edmund G. Loder, Bart. 81 15 8 8 Carl Hagenbeck. 8 Bethnal Green Museum. -8 American Museum of Natural History. 8 A. Barclay Walker. J. H. Whitehouse. ΙI

⁻ Owner's measurements.



HINTS

FOR RECORDING THE LENGTH OF ANIMALS IN THE FIELD.

As the body lies on the ground, and where circumstances permit, proceed as follows:—

Length. Pull the nose and the tail so as to get them as nearly as possible in a straight line. Fix body with four pegs; one at end of the nose, one at end of tail, one at root of tail, and the fourth at the nape of the neck behind the ears.

Height at shoulder. Put the leg or paw in a standing position and place a peg at top of withers and measure carefully standing height (a) with extended paw, (b) with spread paw, as well as length of fore and hind legs from pegs at the stomach-line.

The entries in the game-book should be as follows:—

Length	, straight fron	n nose	to tip	of tai	1
••	along curve	to root	t of ta	il	
"	of tail .				
,,	of head to n	ape of	neck		
Girth, 1	upper arm				
,,	forearm .				
,,	of body .				
,,	of head .				
Height	at hind-quar	ters			
,,	shoulder				
Length	of foreleg				•••••
,,	hind-leg				
Weight	, cleaned				
,,	not cleaned				
Cleane	d skull, lengtl	n .			
,	, bread	lth			
,	, heigh	it			
,	, weigh	it			

In addition to these measurements, the sex, estimated age, locality, and condition of the animal, with any other features of interest, such as colour of the eyes and skin, length of the hoofs, condition of teeth, etc., should be recorded.



Length to Greatest longest tine. width.

Circumference above burr.

Tip to Breadth of palm.

Points. Locality. Owner.

Length on out- Circum- Tip to side ference. Tip. curve.

Widest inside.

Points.

Locality. Owner.

Length on outside

Circumference. curve.

Tip to Tip.

Widest Widest Points. Locality.

Owner.

RECORDS OF BIG GAME

Length on Circum-front curve. ference.

Tip to Tip.

Locality. Owner.

Greatest width. Tip to Width of Outside. Inside. Tip. palm.

Locality. Owner.

Length, Circum-straight line. ference.

Tip to Tip. Locality. Owner.

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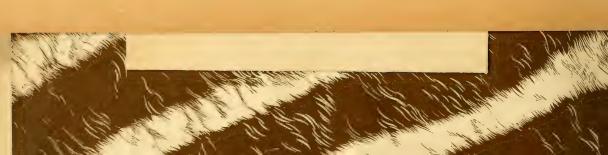
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